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The Deforestation of China

The Chinese Civil Service

Reviving the Monarchy in China

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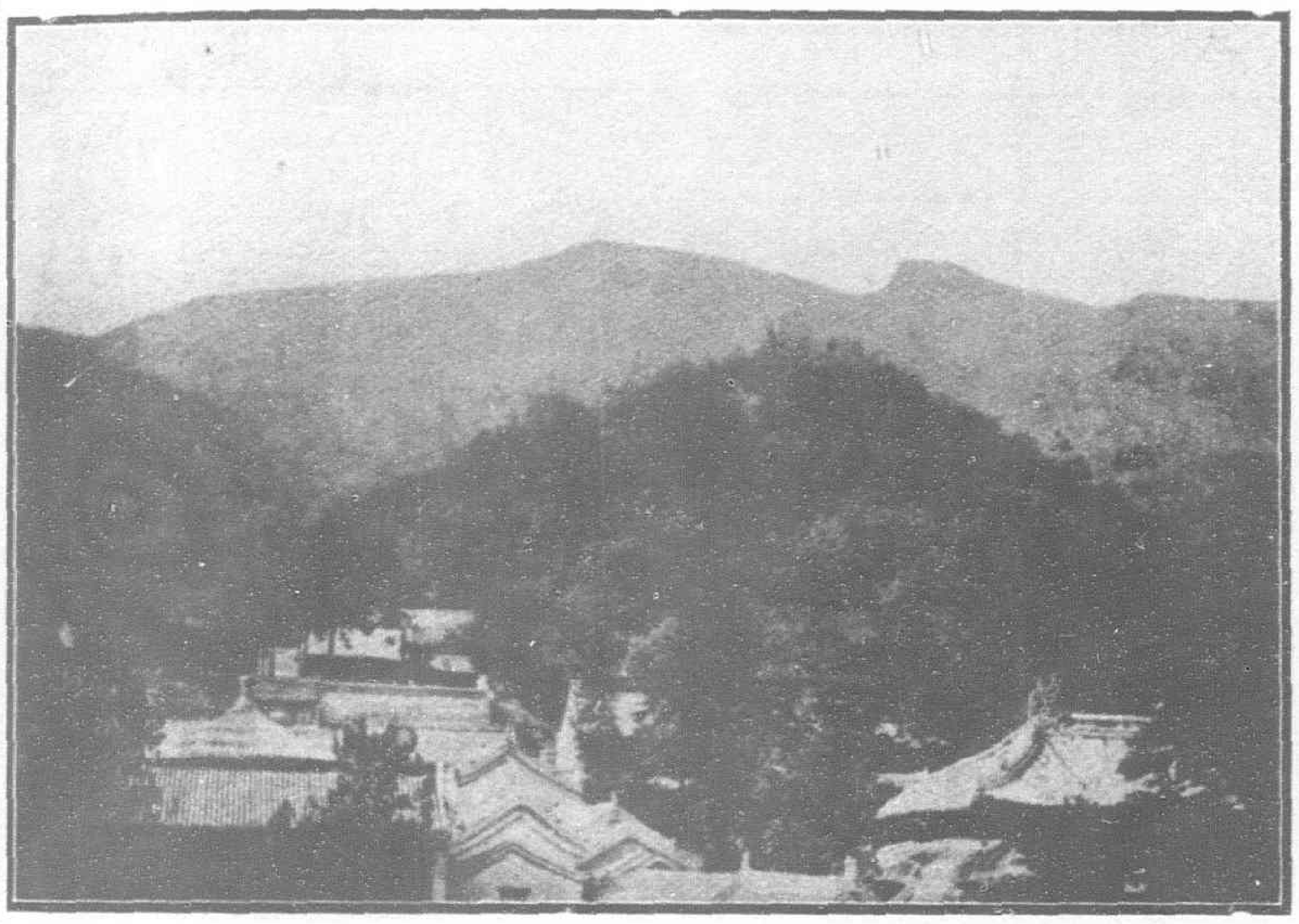
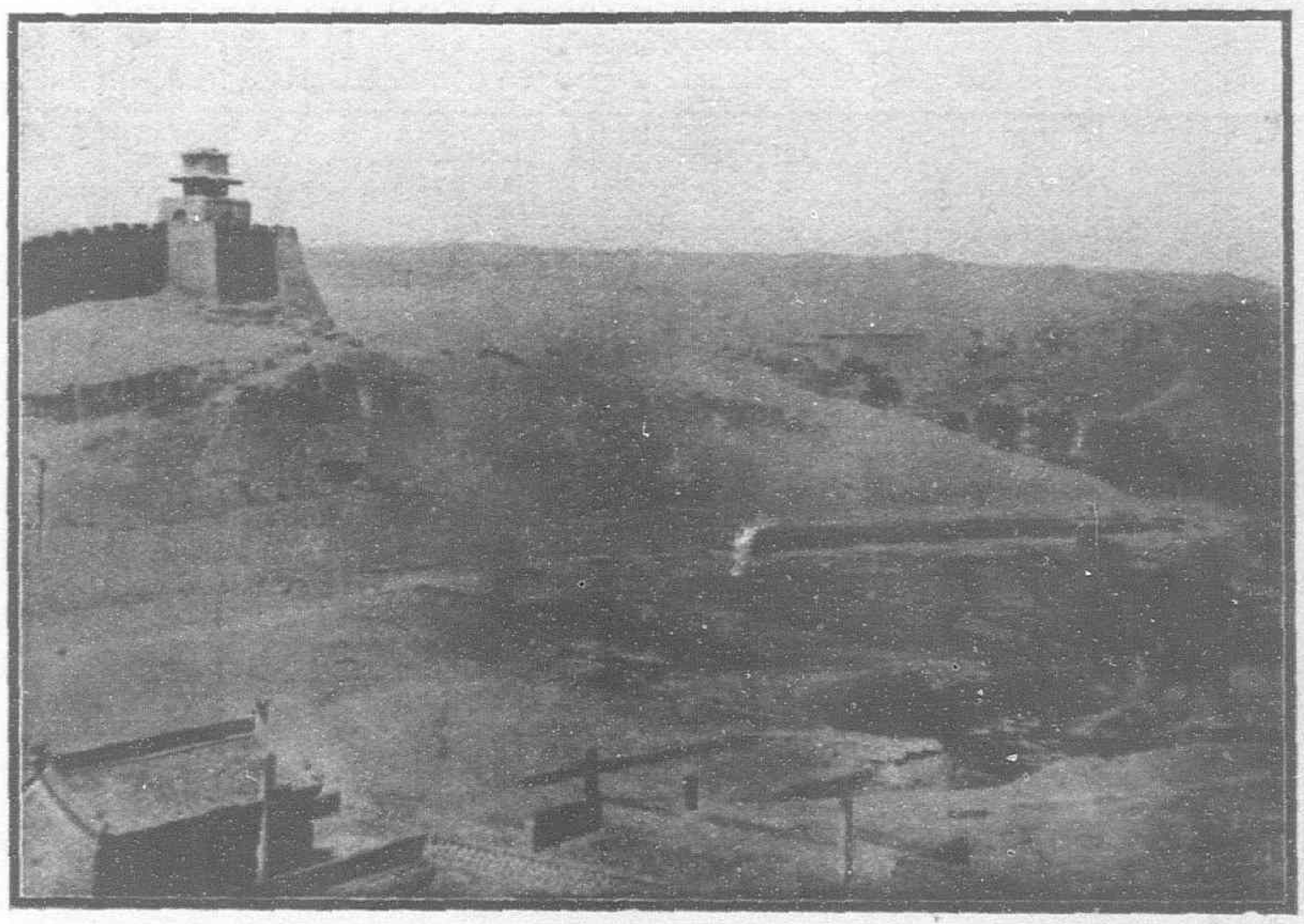
THE FAR EASTERN REVIEW
COMMERCE :-: ENGINEERING :-: FINANCE

VOL. XII. SHANGHAI, OCTOBER, 1915 No. 5

THE DEFORESTATION OF CHINA



PEKING—WESTERN HILLS. TEMPLE PRESERVE CONTAINING OAK AND PINE, EXCELLENT FOR OBTAINING SEED FOR REFORESTING DEPLETED AREAS

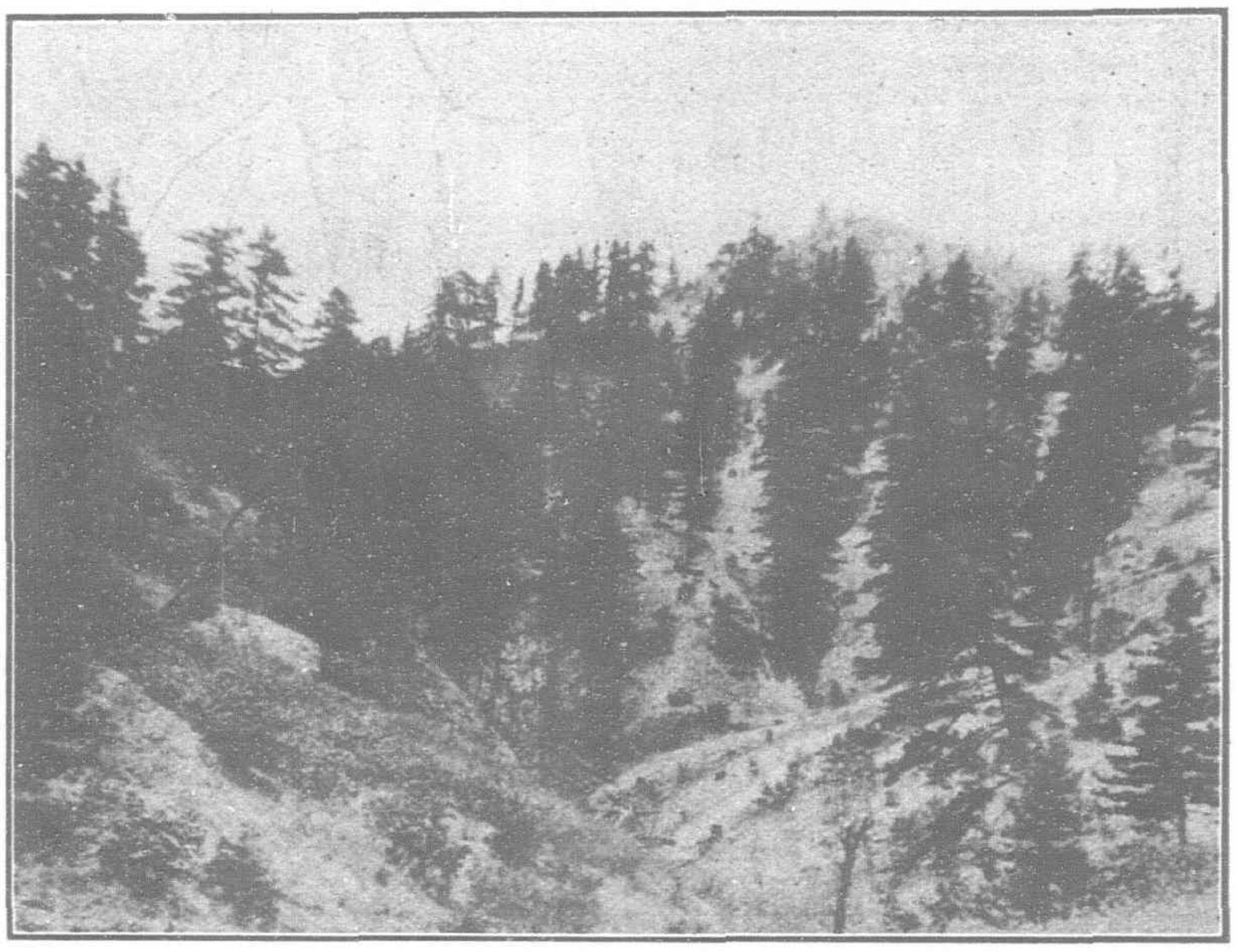


YULIN—CITY WALL. SURROUNDED BY SAND BLOWN FROM ORDOS DESERT

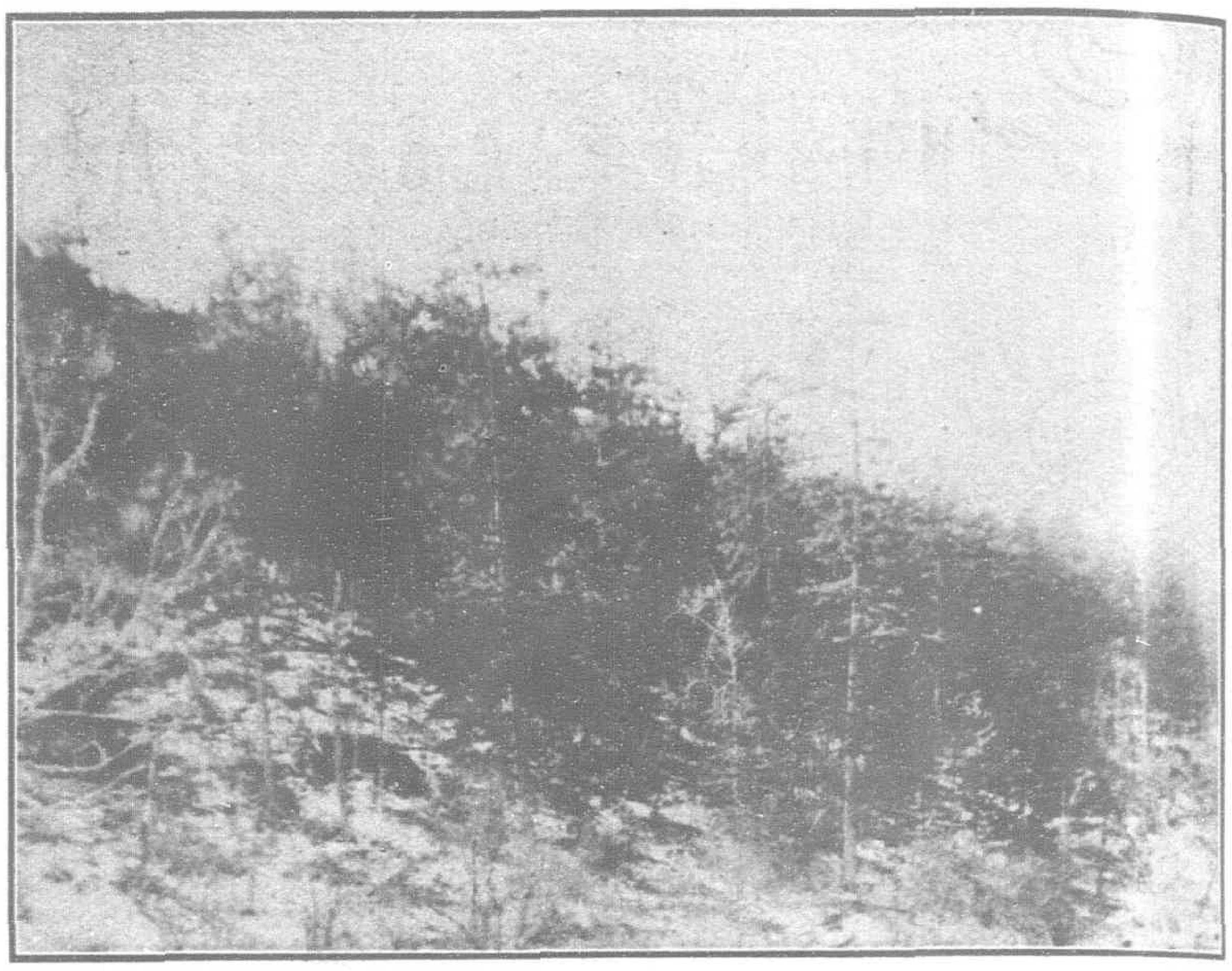
In the last issue of this journal it was mentioned that the Chinese Minister of Agriculture, Commerce and Industry (Mr. Chow Tze-chi) intended to adopt a definite programme of afforestation throughout the country. This is one of the most important steps being taken by the Government, and realising the necessity for expert assistance the services of a qualified man have been secured. Mr. Sherfessee, the Director of Forestry in the Philippine Islands, has been engaged, and will inaugurate a policy for the Government.

In connexion with the denudation of China's forests and the consequent devastation of large areas of territory it is interesting to refer to the comments made by Mr. W. Purdom, (late of the Arboretum, Royal Botanical Gardens, Kew, and Exploration on Forestry Research in Northern China (Chihli, Shansi, Shensi, and Kansu) for Messrs. Veitch, London, and the Arnold Arboretum, Harvard University, Boston), whose research work in China has been of a very valuable order, and whose observations deserve the closest consideration. Writing in the *Peking and Tientsin Times* in the last quarter of 1912 Mr. Purdom endeavoured to stir the Central Government and the provincial officials to a realisation of the grave necessity that existed for immediate attention to afforestation in China. Extensive travelling in the northern provinces on forestry and botanical research bore in upon him deeply the necessity for a scheme of afforestation, and though he felt the time was then ripe for pointing out a few of the drawbacks attendant upon the wanton destruction of what must have been fine old forests, his pleas for action fell upon deaf ears. Mentioning that the serious influence of the loss of these forests on the climatic conditions of the country need hardly be pointed out, he went on to describe the effect upon the general contour of the land from erosion, the depredations made by extension of river beds from silting and the exposure of crops to full climatic conditions, and urged that these should engage the serious attention of those interested in the welfare of the agricultural population. Then Mr. Purdom observed: "Fuel is notably scarce in China, but even this does not excuse the wholesale scraping from mountain sides of every particle of vegetation, a matter of compulsory daily occurrence in many provinces which results in the extinction of all soil binding plants, to say nothing of the many fine species of trees and plants thus lost to the world. This habit is particularly galling when one thinks of the effect the development of the country's immense coalfields would have on this question of fuel.

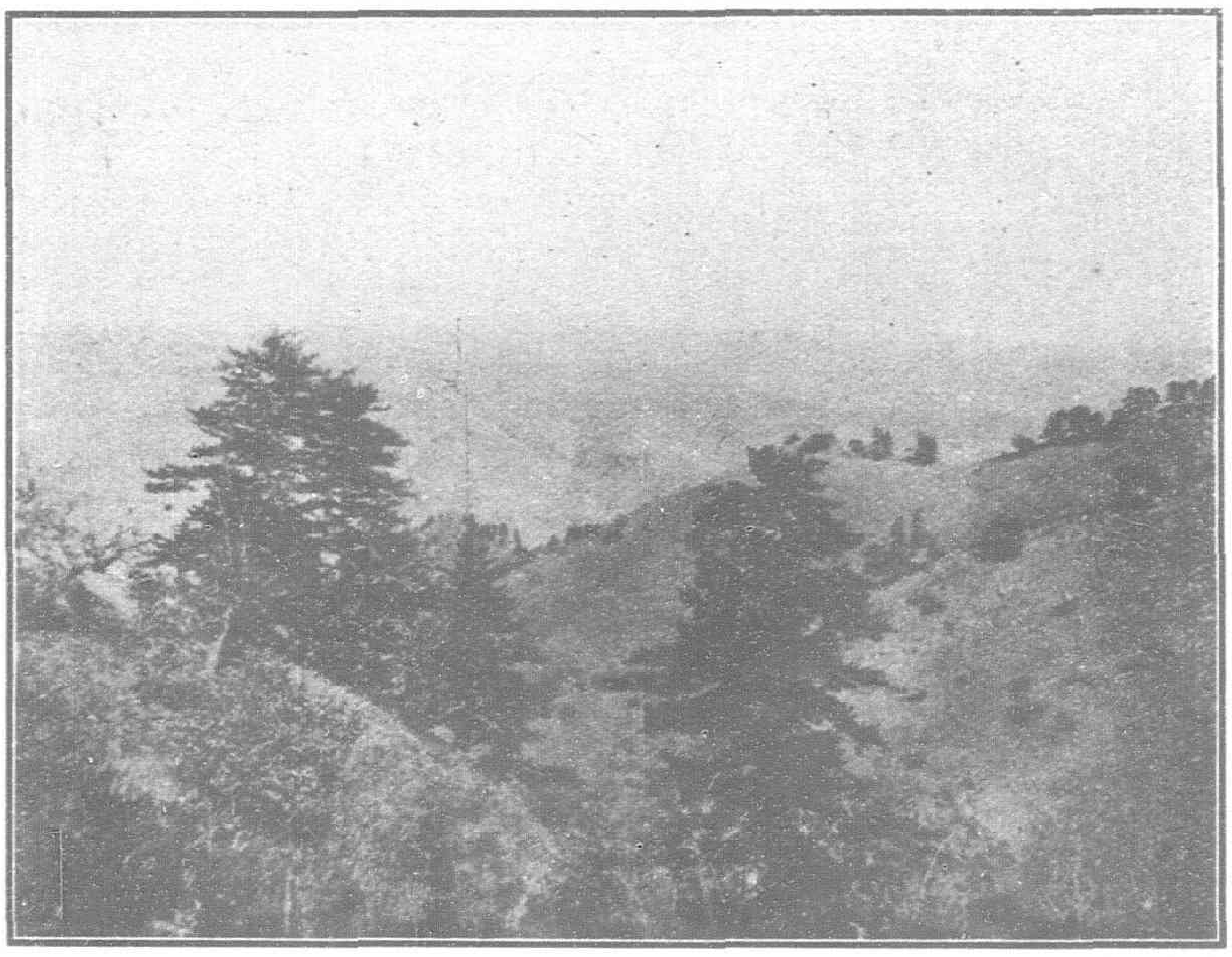
"Here and there remnants are to be found of past forests, consisting mainly of pine, fir and larch, and judging from some of the specimens seen, excellent timber for almost any purpose must once have been available. Particularly in the Weichang district, in Chihli, is this apparent. There appears to be in that neighborhood neither system of felling trees nor any restrictions as to the amount. Thousands of fine poles were observed rotting in the grass, poles, too, of a size suitable for holding telegraph wires. In many parts of Shansi, Shensi, and Kansu similar denudation exists, but there is no reason why, with organized effort, many parts, now barren waste, should not be again afforestated. Between Jehol and Weichang, too, erosion is hard at work; deep gullies forming in the hillsides every year, the soil and sand thus displaced finding their way to the valleys, widening



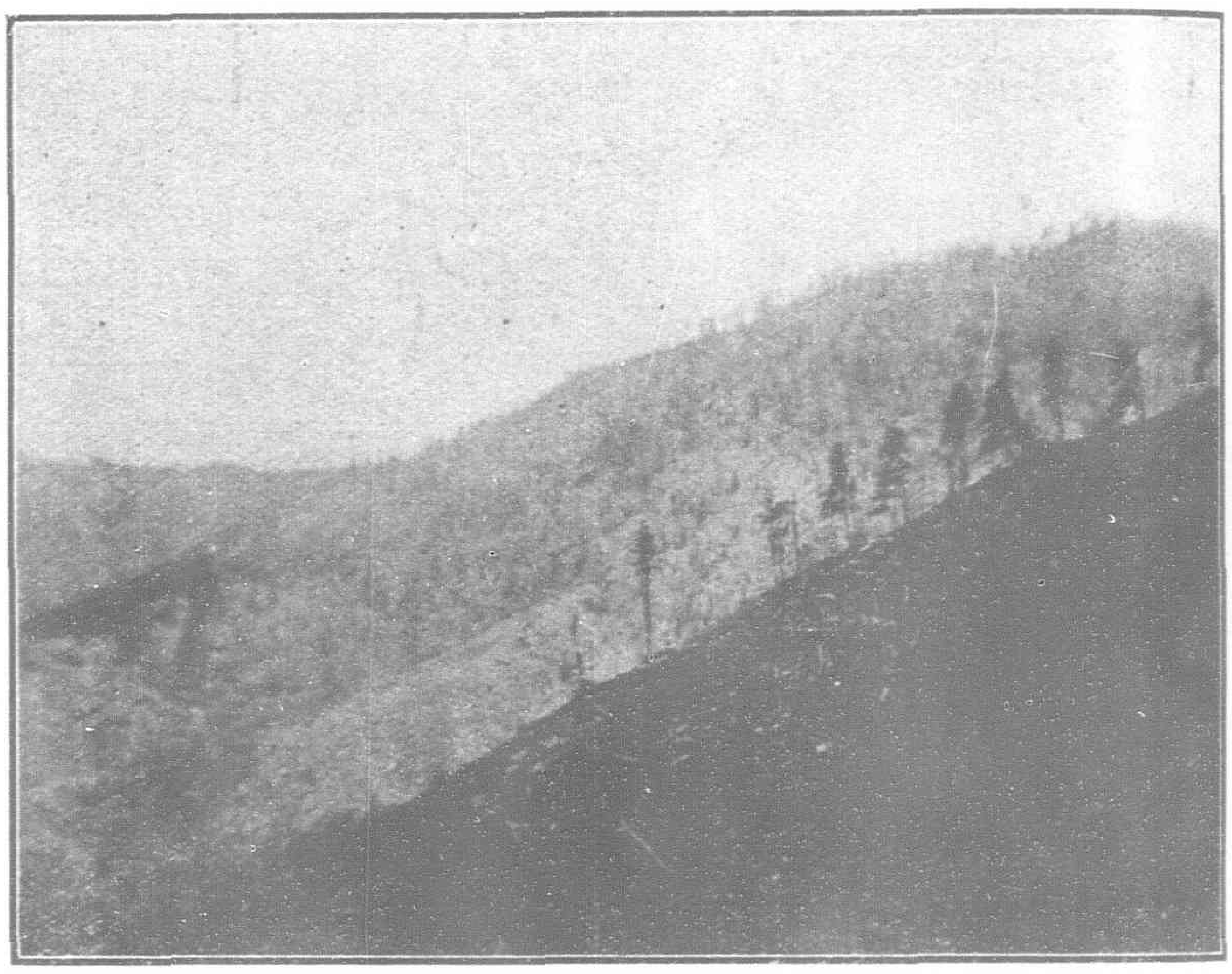
WEICHANG—SHOWING GOOD SIZED TREES WHICH ARE GRADUALLY DISAPPEARING



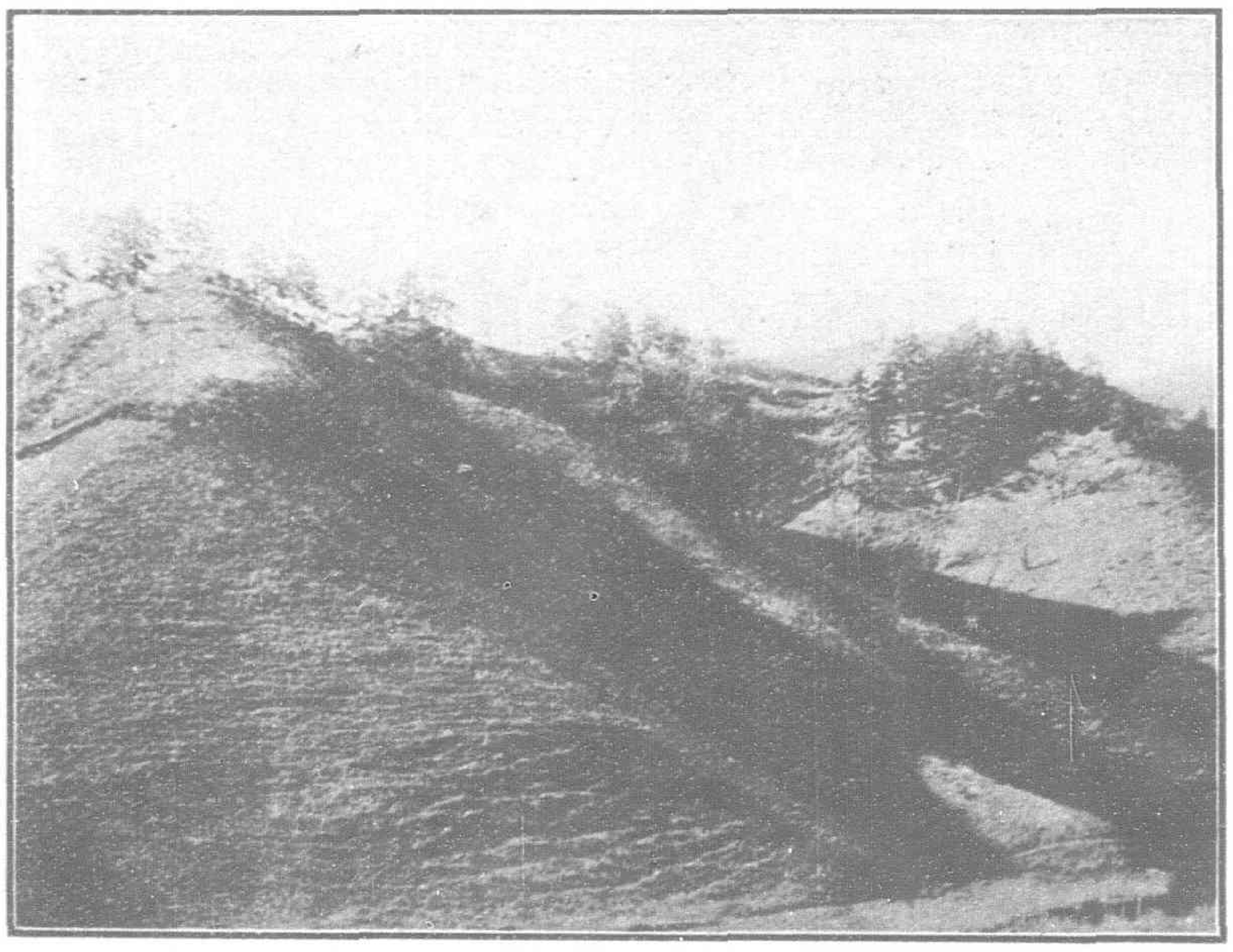
NORTH WEICHANG—VIRGIN FOREST



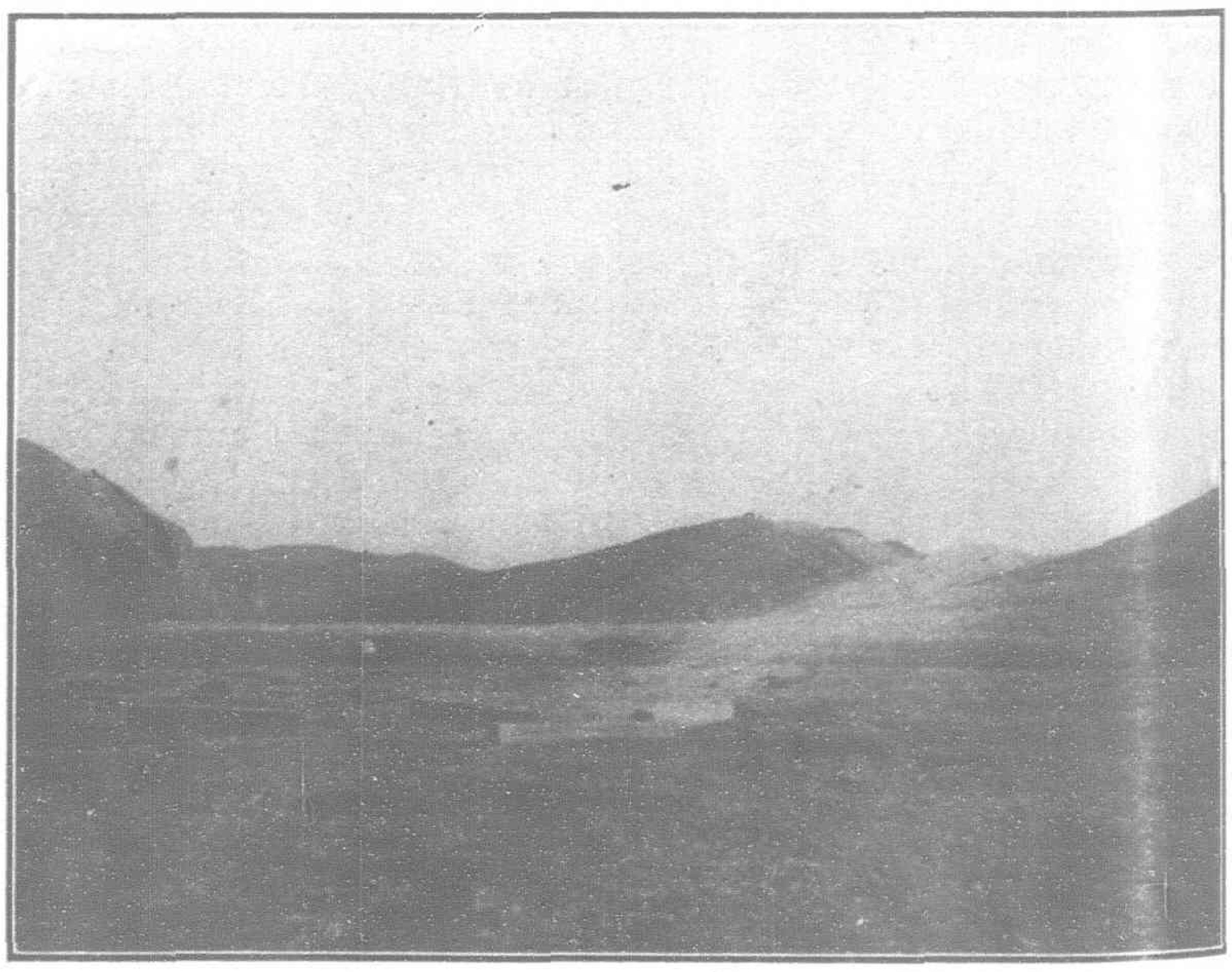
WEICHANG—IN THESE HILLS EXCELLENT PINE AND SPRUCE ARE RAPIDLY DISAPPEARING



WEICHANG—DEVASTATION IN LARCH FOREST



WEICHANG—RIDGED EFFECT OF WEATHER ON GROUND AFTER REMOVAL OF WOOD. WILL ULTIMATELY BECOME MOVING SOIL OWING TO LACK OF ROOT BINDING PLANTS

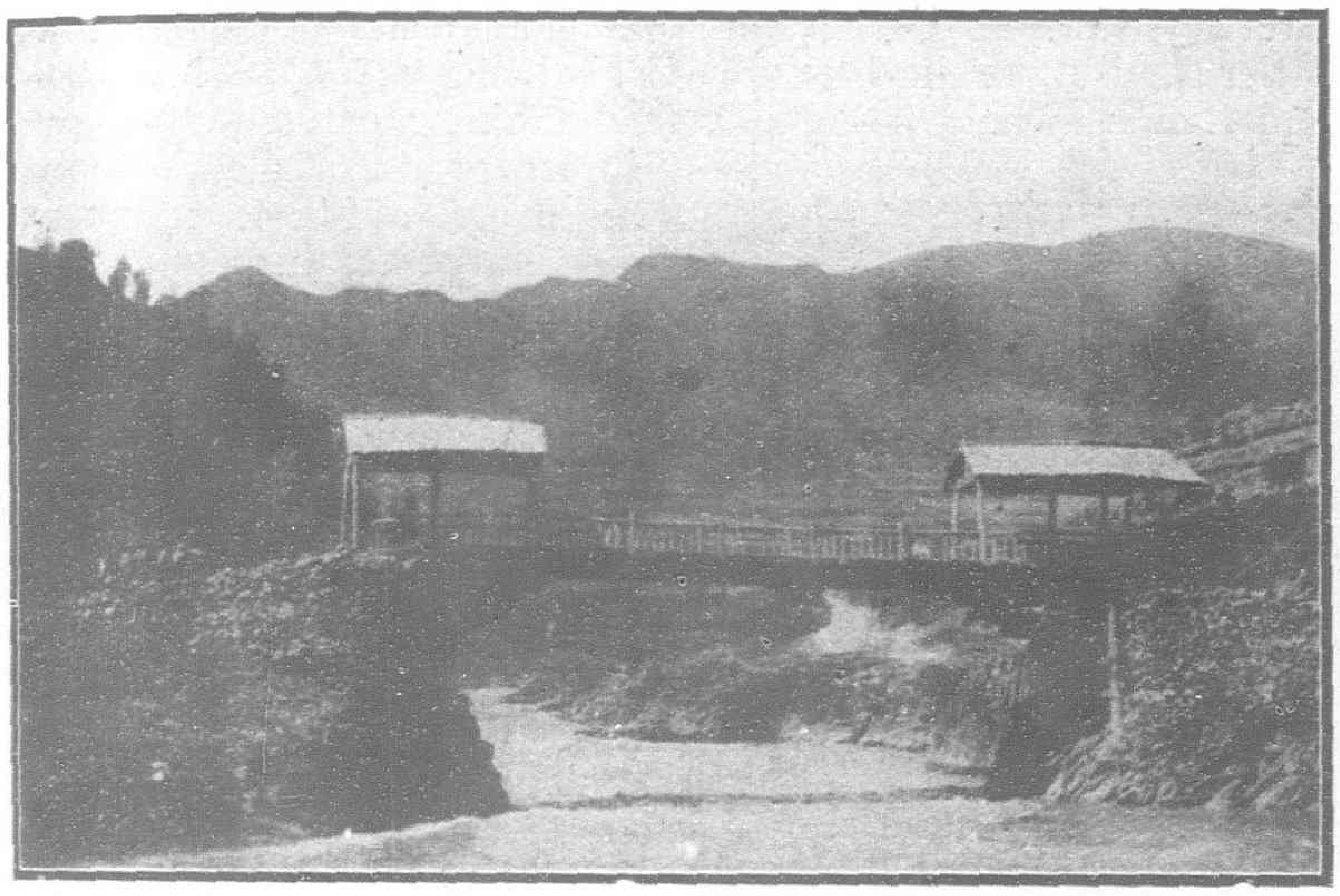


WEICHANG—ONCE WOODED COUNTRY. (NOTE FINE BLOCKS OF TIMBER IN FOREGROUND) out the river beds, hiding all trace of roads in places, and making cultivation of crops an impossibility, except on the slopes of the hills.

“Apart from all these considerations the lack of timber will seriously affect the development of the country in such matters as extension of railways, development of mines and building of bridges both from the point of view of cost and facility of carrying out these enterprises. Many small local industries, e. g., the table making in Jehol, and the ornamental work in walnut at Tsinchow in Kansu, must in time suffer from want of material, though, beside the main issue, this aspect of the matter is comparatively unimportant.

“There is, however, another serious factor in the denudation of land which will one day have to be considered—the encroachment of sands from the northern deserts. While on a visit to Yulinfu, in north Shansi, the writer was particularly struck by this. For many li south of the Great Wall sand prevails, choking out all signs of vegetation. Here the planting of soil binding plants would prove of the greatest possible benefit, and even further south on the great Peking plain the same policy could be used with a view to protecting the region from the heavy winds which sweep across it in spring.

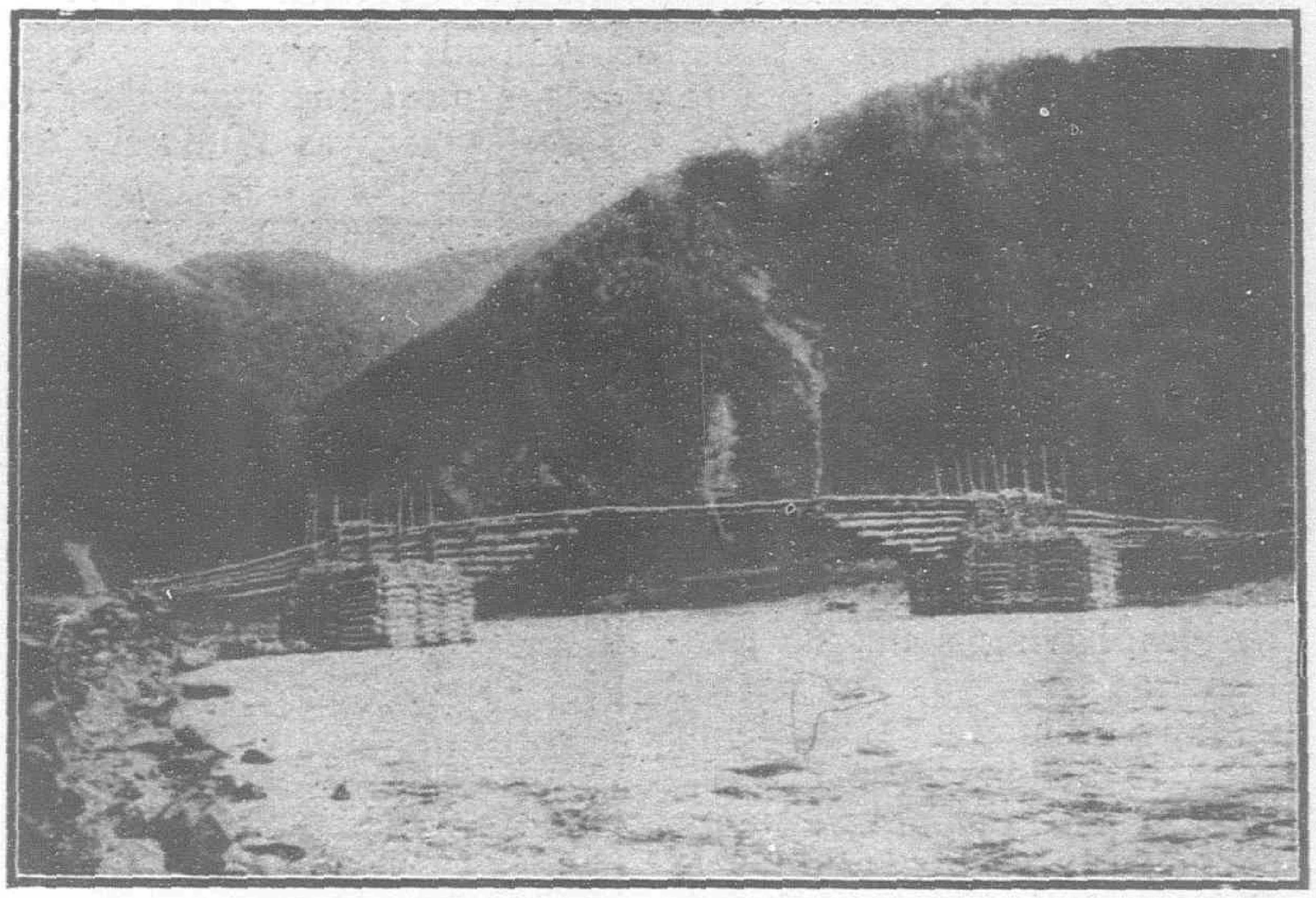
“Without making any pretension to laying down a complete and exhaustive forest policy, the carrying out of which would naturally be a somewhat lengthy process since the people need educating in the matter, a few suggestions are offered for immediate use which need involve but little outlay. In many parts of the country deep gullies are forming each year as a direct consequence of the denudation of the vegetation. By judicious encouragement of the people of such districts, grasses and all brushwood growing near the gullies, instead of being cut away, could be allowed to remain and the roots would help to bind the soil together. Following this the planting of the common willow, a very simple operation well known to the Chinese, would further stop the rush of soil to the valleys. To deal with valleys on a large scale, the deepening of rivers, making of embankments and more extensive planting of a variety of trees are of considerable importance in draining the land and restricting the rush of water during heavy rains. Once the native could be made to realise how much more land for cultivation would thus be placed at his disposal even work on this large scale should be a comparatively simple matter, and the numerous prisoners now uselessly confined might be thus employed with great gain to the country.



Kansu—Bridge between Chone and Minchow. (Note long span of timber)

“Every one who has travelled over the great Chinese plains and felt the discomfort, alike in summer and winter, from the intense heat untempered by shade or the sweeping bitter winds unchecked by ‘shelterbelts,’ must acknowledge that if the sides of the tracks crossing the country could be planted with such a tree as the easily attainable, quickly growing poplar, something would have been done towards mitigating these circumstances. Not only would this affect the travellers’ personal comfort, but the crops growing between the belts would also have the benefit of protection. Most of the hills bordering the plains are devoid of plant life; the soil has become baked by the sun and time has rendered it sterile. Herbaceous or shrubby vegetation on these heights would provide shade, and the soil would retain moisture for a much longer period, while, at the same time, the relative humidity of the atmosphere would be increased. Again, the physical enrichment of the soil would be greatly enhanced because of the decayed vegetable matter formed by flowers, leaves, fruits, etc., during the fall.

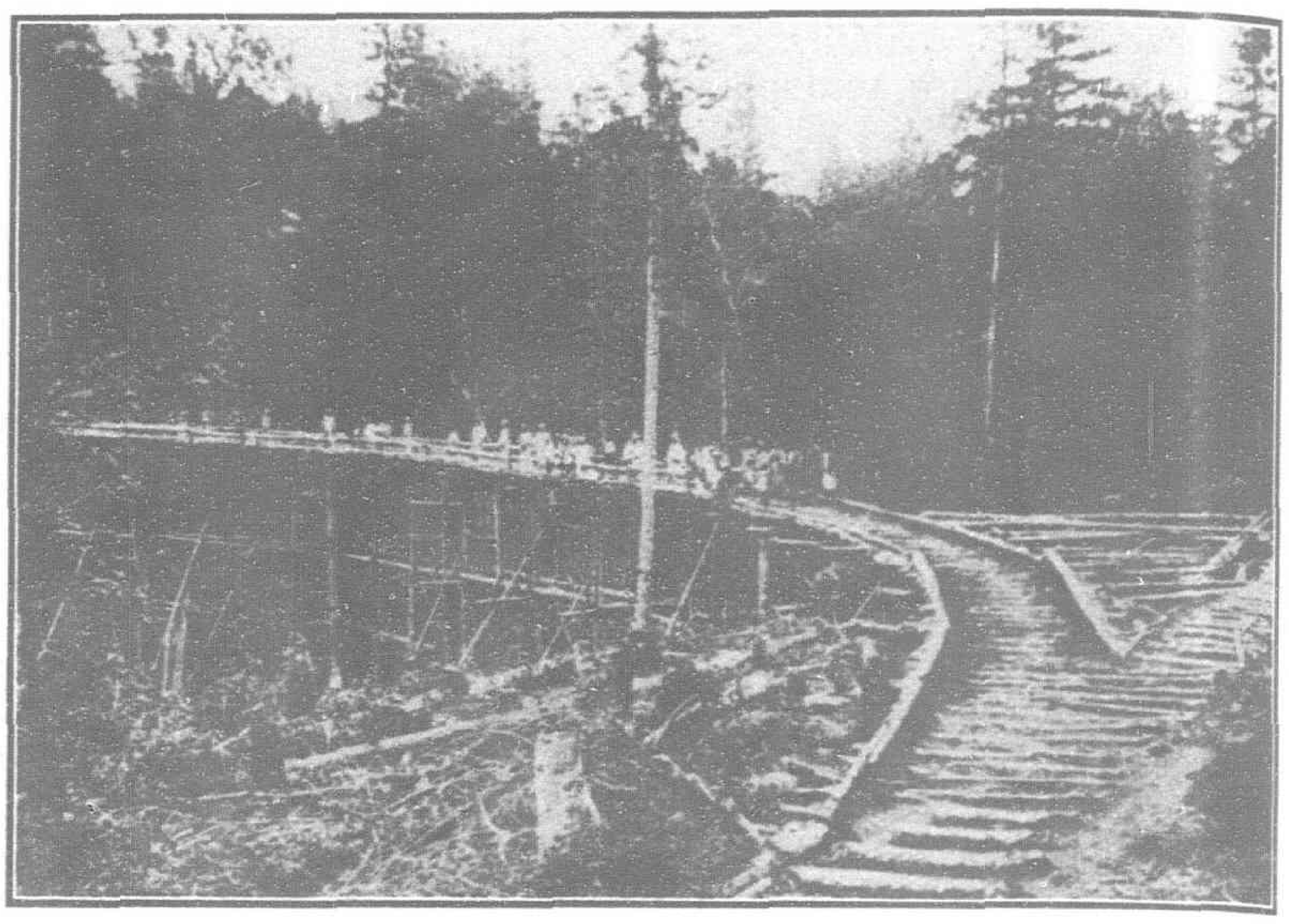
“The streams, flowing down the ravines of the great mountain systems to join the main rivers, are silted up, particularly at the confluence of parent river and feeder, and shoals are here formed many acres in extent, thus unfitting valuable land for cultivation. In addition to this, water enters the main stream so suddenly that floods are frequent and occur without much warning, great damage being thereby done to crops in the low-lying land towards the river mouths. If an irrigation system were introduced, or rather a system of irrigation and drainage combined with planting along the canal banks, two purposes would be served: the country would be protected from sudden inundation, and much land reclaimed. The roots of trees along the canals would bind the banks and prevent shifting while the thick leaf surface would provide shelter. Land adjoining desert areas, now covered with the ever shifting sands, could be reclaimed for agriculture at the expense of a little time and trouble. The first object is to fix the moving sand, which in many places forms large waves in the direction of prevailing winds and covers all trace of plants on virgin soil. In dealing with such parts fences or palings should be inserted in the sand to form a break, and in the enclosure formed by these, sand sedges and other native soil binding plants would have a chance to establish themselves, and ultimately hold the sand intact, after which useful trees and shrubs might be introduced, and thus a natural fence or break should be formed.



Kansu—Bridge crossing Tow River near Chone. (Built of timber grown in adjoining forests)

“Another point needing immediate attention is the amount of wood felled. It should be strongly impressed upon the people of the districts where remnants of woods remain, that a certain amount of stock trees should be left untouched each year, as this system would provide for future scientific forestry operations, and these reserves would give the annual supply of seeds requisite for restocking depleted areas. In the hills west of Peking the temple preserves contain fine species of pine, oak, and chestnut with an abundance of low soil binding plants. In northern Chihli there are excellent larch, fir, oak, pine, birch and elm, and northern Shansi shows scattered woods. The provinces of Shensi and Kansu, especially in the Tsinling Range district, have large quantities of medium sized trees, but unfortunately there is no restriction in the cutting of timber and the woods are literally mown down, few, if any,

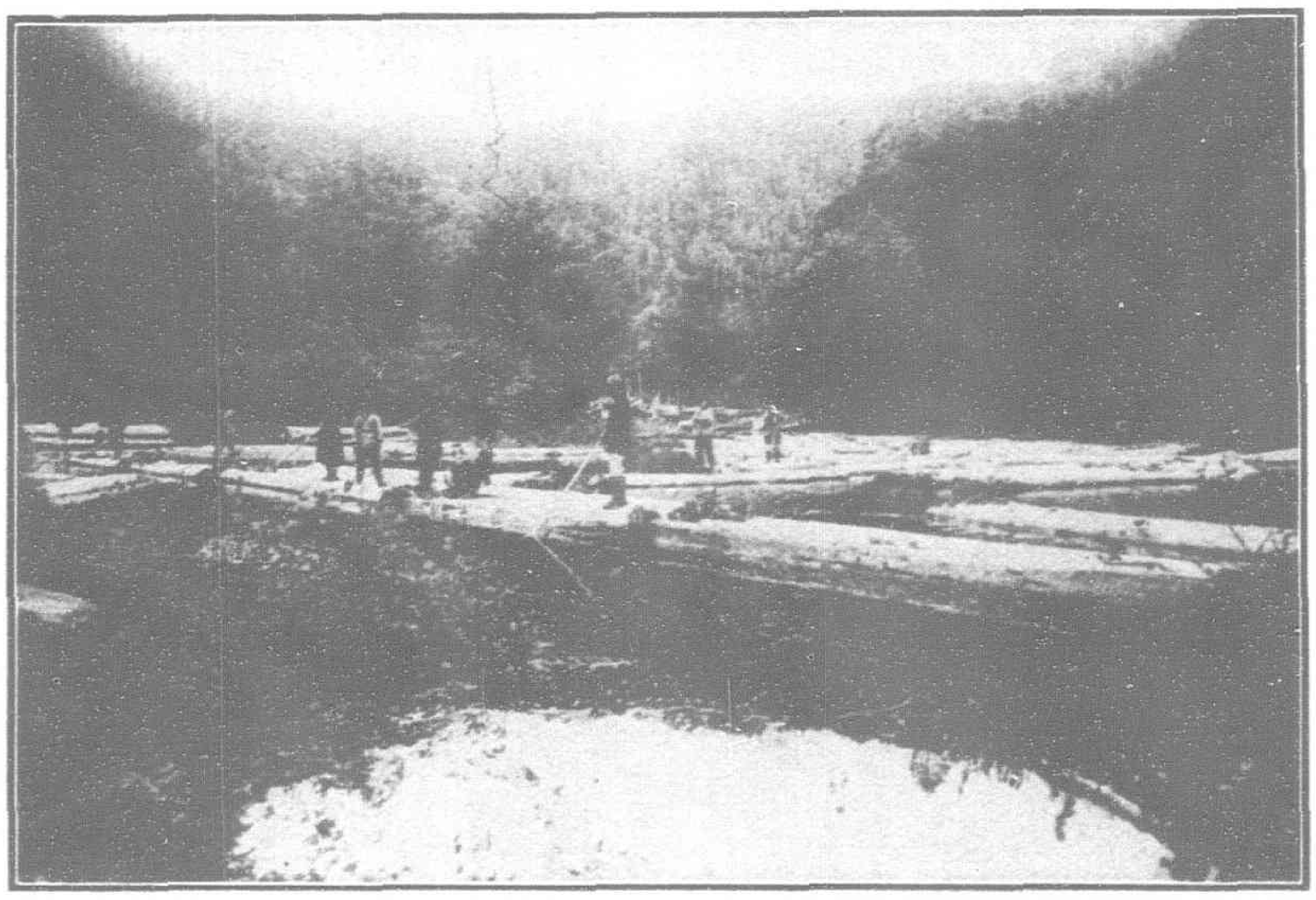
LUMBERING IN YALU RIVER DISTRICT



CONSTRUCTING LOGGING RAILWAY

specimens being left to act as stock-trees for future use. The above-named provinces would furnish sufficient material for a good start to be made in the restocking of the once extensive forests of north China, while Yunnan, Szechuan and similar provinces would form a basis for the south and west.

"Having referred to a few of the most important dangers arising from the absence of a forest policy as it affects the country physically, and simple remedies for the same, a word may be said in favour of forest utilisation from an economic standpoint. The industrial uses of wood are too numerous to mention, but in building, railroad making, and shipbuilding it stands pre-eminent among raw materials, besides having a unique position as regards implement making. This fact alone should spur to action those thinking of a country's advancement, particularly such a country as China, which has now before it the hopes of a bright and prosperous future, but which has in the past paid so little attention to a vast source of wealth—its grand old forests. The numbers of local industries which would spring to life if a permanent supply of wood could be relied upon from forest areas can hardly be calculated, and there is no reason to doubt that a large export trade in timber would be possible for the same reason. Railroad extension and communication by telegraph could be rapidly made if timber were easily available, and the linking up of the provinces would do much to help the union of China and mitigate the local prejudices among the lower classes, which is one of the great factors in the hindrance of the labours of those who are bent on making the most of a country of endless variety and inexhaustible supplies of most economic products. The better housing of the people would follow naturally, since abundance of building material would result in loftier and more healthy dwellings being set up, while mine exploitation would receive considerable impetus. Of minor forest products mention may be made of bark for tanning purposes, turpentine and resin from the pine and fir trees, oil from the various nuts and fruits, ornamental woods for furniture making, medicines from such plants as ginseng, forest herbage for the maintenance of domestic animals, while the shrubby brush growing under high trees would produce a continuous supply of fuel.



TIMBER RAFTS ON UPPER YALU

"Enough has been said to show that the country would benefit physically and financially from attention to this afforestation question while the fact that increasing quantities of timber are yearly required all over the world, that prices are rising and will rise, owing to this scarcity and the present unsound basis of the forestry question in most countries, behoove a land possessing China's natural advantages for meeting this need and at the same time extending her own influence by the establishment of industrial and commercial prosperity, to consider whether this is not one of the most important factors in a policy of 'Forward.'"

YALU TIMBER MARKETS

Yalu timber has for its principal markets Tientsin and Shantung, local demands in South Manchuria, of Yalu timber forwarded from Antung by railway during 1913 being 6,105 tons and 1914 demand, 6,427 tons. No material change appeared in the figures themselves, but the sphere of distribution in South Manchuria was enlarged.

The destinations of the consignments comprised the following stations which received more than 300 tons:

	1913	1914
Mukden - - - -	2,813	970
Fushun - - - -	870	792
Liaoyang - - - -	671	474
Yingkou - - - -	376	397
Lienshankuan - - -	256	1,088
Wulungpei - - - -	249	78
Penchihu - - - -	162	1,091

The Amount of timber rafted down the Yalu to the Yalu Timber Co. and sold during 1913 and 1914 follows:

	Arrivals by rafts	Sold
1913....	558,726 pieces	652,651 pieces
1914....	2,725,949 „	1,467,783 „

Of the above, 34,757 pieces were shipped to Shantung by steamer. The amount exported by junks is not available.

REVIVING THE MONARCHY IN CHINA

Events in connection with the movement to re-establish the monarchical system of government in China have moved with remarkable rapidity. Those who opposed the movement at its inception apparently misjudged public feeling on the question. They believed that the movement had so little genuine support that it could be killed by ridicule. How mistaken this view was has been shown by the constantly augmenting stream of petitions from all parts of the country urging the Council of State to take the necessary steps to re-establish the monarchical system of government. It is noticeable that many of the men who were prominent during and shortly after the 1911-12 revolution, and who from one cause or another have taken no part of late in public life, have resisted all the efforts made to induce them to declare against the movement. As far as it is possible for foreigners to judge the opinion seems to prevail that there is a better prospect for the maintenance of internal order if legal sanction be given to the monarchical system.

Since the publication of the last issue of the FAR EASTERN REVIEW there has been no slackening of the strong disposition shown to endeavour to obtain an expression of the people's will at the earliest possible moment. It was recognised that whatever decision might finally be reached, uncertainty was inimical to the country's interests, and the Council of State, therefore, submitted to the President on September 20 the suggestion published in the last issue, which was an indication that the Council realized that the country was anxious for a speedy settlement of the question.

The President replied to the suggestion in the following terms:—

> "I beg to acknowledge receipt of your despatch stating that after receipt of petitions from public organs and private individuals in various places on the subject of the form of state (Kuo-Ti) you referred the same to a Committee for investigation; and that acting upon the recommendation of the Committee the House has resolved that since the form of state is one of the most important subjects in the Constitution and its solution rests with the Citizens' Convention, the President should convene the Citizens' Convention within the present year or devise some other proper and adequate means to consult the will of the people, etc.
>
> "The responsibility of passing the Constitution devolves upon the Citizens' Convention and as the solution of the present question concerns the foundation of the nation, therefore it is imperative that we should proceed with special care. We have already promulgated a mandate setting the 20th day of the 11th month as the date for the final election of the members of the Citizens' Convention. When the final elections throughout the country shall have been completed, the Citizens' Convention will be convened and formally inaugurated. We shall then be able to secure and ascertain the proper opinion of the people.
>
> "Besides making the above reply, we have referred the matter to the Bureau for the Preparation of the Citizens' Convention."

In many quarters it was felt that it would be inexpedient to delay the decision as suggested by the President, and many petitions were sent to the Council of State urging that a special popular body should be convoked to which the question of the form of government would be submitted. One petition signed by over ten thousand members of the Chou An Hui (Society of Peace) read in part as follows.—

> "In the suggestion of Your Honourable House to the President, we find, to our surprise, that undue emphasis is laid on the Citizens' Convention and in the President's reply to the Tsan Cheng Yuan, the Citizens' Convention is also specially mentioned. Though it must be admitted that in making this suggestion, the House has acted not without prudence, we are in doubt whether it is wise to delay thus the settlement of such a vital issue. This, we think, is not the proper way to tranquilize the mind of the people.
>
> "The change in the form of state is a question which falls within the limits of politics rather than those of law. If the Government adheres to the idea that the question must be settled on a 'legal basis,' we suggest that too much importance is being paid to considerations of 'formality.' Moreover, the Citizens' Convention is, according to the provisions of the Constitutional Compact, an organ vested with the power to pass the new Constitution of the Republic, and if it is called upon to change the Republic into a monarchy and elevate the President to the Throne we wonder how the Convention will justify itself for doing things which are certainly beyond the ambit of its power. The situation would indeed strike the world as immeasurably ridiculous.
>
> "Now if the Citizens' Convention also holds to the letter of the law, while at the same time trying to satisfy the 'desire of the people,' it may be compelled to adopt such absurd systems of government, as a Hereditary Presidency or 'the Republic with a Monarch,' suggested in certain quarters. The adoption of such 'neither-mule-nor-horse' system, even if the same holds for the purpose of satisfying the 'desire of the people,' would pillory this country before the world as an object of laughter. This Society is opposed to all the suggestions. The object of our search is Constitutional Monarchy. According to our idea, the new ruler must have the name as well as the actual power of a monarch; and he must bear the same title vis-a-vis both the people of his own country and Foreign Powers. We contend that the Citizens' Convention cannot accomplish the desired end because the same is beyond its powers.
>
> "We deem it therefore inexpedient to submit the question to the Citizens' Convention for solution; because, in the first place, to do so would involve delay and, secondly, the Convention itself has not such a 'broad latitude of power' to effect the change of Kuo-Ti. We beg to inform the House that we cannot acknowledge the method which the House has suggested to the President and endorsed by him as the proper means of solving the problem. We hereby request the House further to discuss the question and to suggest the organization of another popular organ, with large and adequate powers, at an earlier date than the convocation of the Citizens' Convention. To this organ, the great question should be submitted for solution. After the question is definitely settled, the Citizens' Convention should be convoked to discuss and pass the new Constitution. This course will secure an effective solution while at the same time the spirit of the law will be strictly observed. The mind of the people will then settle to peace and a great blessing will be vouchsafed the people and the country."

This and other petitions were considered at a session of the Council of State held on September 28. The petitions were submitted to a committee consisting of Messrs. Liang Shih-yi, Wang Yu-lin, Sze Yu, Chen Kuo-hsiang, Chiang Han, Wang Shiu-lien, Wang Hsu-shan, and Liu Yueh-tseng for investigation. This committee on September 30 passed a resolution recommending the ascertainment of the people's will by the provincial balloting system. A bill was drafted in accordance with this resolution.

On Saturday, October 2, a meeting of the Tsan Cheng Yuan was held and the draft bill was read a first time. Mr. Liang Shih-yi, the Chairman of the drafting Committee, pointed out that, according to the bill the number of members constituting the Citizens' Representatives would aggregate over 2,000. After some discussion the bill was submitted to a Committee of nine members for examination. It is interesting to note that Gen. Hsu Ko-cheng, who was in command of the revolutionary troops which captured Nanking from the Imperialists in November, 1911, was appointed Chairman of this Committee.

The Committee met on October 4th, and amended the draft bill to include representation for over-seas merchants and Mohammedans. A few minor modifications were also made to facilitate balloting and to expedite the arrival at a decision on the question.

The Tsan Cheng Yuan met again on October 6th and the bill was passed through all its stages, and at about 3.30 p.m. was declared unanimously passed. At these meetings, it must be mentioned, Vice-President Li Yuan Hung, Chairman of the Tsan Cheng Yuan, was not present, Mr. Wang Ta-Hsieh, the Vice-chairman, presiding.

When the bill was carried it was decided to forward it, with the petitions received by the Council, to the President under a covering despatch. The latter reads as follows:—

> In requesting the promulgation of the Law on the Organisation of the Convention of Citizens' Representatives, we have the honour to state that, in compliance with the repeated petitions of the various Bodies representing the Provinces, Special Administrative Areas, Inner and Outer Mongolia, Chinghai, Mohammedan Regions, Inner and Outer Tibet, the Banners' People, Princes, Dukes as well as Chambers of Commerce, Educational Societies and Oversea Merchants, respecting the change of the form of State a decision was made by this House which was forwarded to the Government together with the 83 petitions submitted, suggesting that the fundamental solution of the issue raised by the Petitioners should be effected by the Citizens' Convention whose convocation should be hastened or by other proper and adequate means to ascertain the will of the people. We were profoundly impressed by the wisdom

of the Great President who envisaged the matter from a broad point of view and seized the "happy medium" as evidenced by his desire to wait and submit to the real will of the people as ascertained by the final balloting of the Citizens' Convention and to limit any solution within constitutional bounds.

Since the transmission of the 83 petitions to the Government, however, we have received further petitions from Shen Yun-pe and other representatives of the United Society of Petitioners of the whole country; Feng Lin-pei and other representatives of merchants of the whole country; A-mul-rin-kwei and other representatives of the "Public people" of the whole country; Wang Kwan and other representatives of the Mohammedan Mutual Progressive Society; the United Society of the Mohammedan Religion and Mohammedan Race and the Eight Mohammedan Regions; Cheng Cheng-to, representative of the Mohammedan Tulfan Harmi; Teng Hui-yuan, representative of the Aboriginal Tribes in Western Yunnan; Yang Tseng-ping, the representative of the entire body of Princes and Dukes of Sinkiang, Mongolia and Mohammedan Regions and the Manchurian and Mongolian garrisons at Ninghsia; Hun Yu-ting, representative of the Social Progress Society; Ting Wei-tung, representative of the Educational Circles of Peking; Hsu Chih-tao, representative of the Leading Chamber of Commerce of Kweichow; Yang Tu, representative of the Chou An-hui; the United Society of Chambers of Commerce of the whole country; Yu-feng-hou and other money-merchants. These Petitioners are unanimous in the opinion that since China has been for over two thousand years a monarchy, the people have long been accustomed to submit to a "one-man" rule, that the change for the republican form of State after the year of Hsin-hai (1912) was not in accordance with the requirements of the then existing conditions, thus resulting in the unsettled state of the mind of the people and the uncertain standing of the State. The reason is that since, according to the republican system, the office of the President has to be changed constantly, no continuous policy can be guaranteed on the part of the Government and no definite plan can be laid down on the part of the people. In addition, there is also the danger of the ambitious, unduly aspiring to the Highest position, thus resulting in sowing the seeds of rebellion, which would occur every few or a few scores of years.

Our country has also seen many rebellions; and as the vitality of the nation has not recovered, the improvement of the administration is urgently needed. As the people are greatly in need of stability, the only method is to adopt quickly a constitutional monarchy with the object of securing a permanent peace and continuous government so that law and administration may mutually assist each other. Thus may the foundation of the nation be strengthened and the influence of the State given a new life. There is no other course in the eyes of the "entire body of the people of the whole country" after careful consideration. Even many recognised foreign scholars of politics hold that Republicanism is not suited to China and are in favour of a constitutional monarchy. Hereby is fully shown in which direction the desire of the people turns and where truth lies. They claim that at the same time that the cry of the people for the actual appearance of a constitutional monarchy is urgent and earnest, because it is the best course by which the country may be saved. It is evident that the question should be immediately solved but the convocation of the Citizens' Convention will take some time besides this particular body is for the purpose of settling the Constitution only. A constitution cannot be decided until the question of the form of State is settled. The great question of the nation cannot, therefore, be solved unless an unbiased organ be speedily formed for the ascertainment of the "real will of the people."

In spite of the fact that we were reluctant to make any hasty proposal since we have already suggested methods and the Great President has also decided upon the procedure to follow, we cannot ignore the "united appeal of the people," repeatedly uttered; and in consideration of the necessity of respecting "the will of the people" this House has again brought up the subject for discussion. As a result we are now of the opinion that since this is a question of extroardinary importance it should not be solved by ordinary methods. The State is the State of the people; and the form of State should be adopted or rejected according to the wish of the people: and as the will of the people is now for a speedy solution, it becomes our duty to yield to the desire of the people and place the question above everything else. This is in accordance with the proposal last made by this House that efficient and adequate means may be devised to ascertain the real will of the people, especially as the Great President has uttered the warning that too much care cannot be exercised in settling the "great fundamental question" of the nation. Article 2 of Chapter I of the Constitutional Compact provides that the sovereign rights of the nation are vested in the entire body of the citizens; and since nothing is greater than the rights that form the State, the same should be settled in accordance with the will of the entire body of the people.

We therefore decide that the name of the body should be called the Convention of Citizens' Representatives, which shall be drawn from the members elected by the successful candidates of the primary election of the Citizens' Convention, for the purpose of settling the question of the form of State. In this way all the Provinces, special Administrative Areas, Manchuria, Mongolia, Mohammedan Regions and Tibet shall have representatives therein. Only an organ thus organised can be termed an unbiased organ of the people and only opinion thus secured can be called "the real will of the people." For every part of the country will be represented and the decision of the entire body of the people will be secured. Thus it is seen that it is an improvement on the Citizens' Convention. In accordance with Article 31 of the Constitutional Compact, therefore, we held a meeting on the 6th day of the tenth month and passed the law on the Organisation of the Convention of Citizens' Representatives after three readings; and as the entire body of the country are in a state of exceeding haste to see the solution of the question of the form of State, we hereby submit to you the text of the said Law together with the petitions and ask that the Great President shall speedily promulgate the same.

Law on the Organization of the Convention of Citizens' Representatives

Art. 1. Respecting the petition of the entire body of citizens of China concerning the question of the form of State, the question raised shall be decided by the Convention of Citizens' Representatives in accordance with the collective wish of the entire body of the citizens of the country.

Art. 2. The election of members to the Convention of the Citizens' Representatives shall be effected by the system of initialled single balloting. Those who secure a majority of votes shall be elected.

Art. 3. The Convention of Citizens' Representatives shall be composed of the following representatives:—

a. Each district in every province and special administrative area shall elect one representative.

b. Outer and Inner Mongolia shall elect altogether 32 representatives, two for each League.

c. Outer and Inner Tibet shall elect 12 representatives, six for each division.

d. Chinghai shall elect six representatives.

e. The Manchu, Mongolian and Chinese Banners (eight-each) shall elect 24 representatives, one for each Banner.

f. Sixty representatives shall be elected by the Chambers of Commerce throughout the country.

g. Thirty representatives shall be elected by recognised learned scholars.

h. Twenty representatives shall be elected by those who have done good service to the country.

Art. 4. The representatives of the citizens in the provinces and special administrative areas shall be elected by the successful candidates of the primary election for the Citizens' Convention.

Art. 5. The representatives of the citizens of Mongolia, Tibet, Chinghai and the Mohammedan Leagues shall be elected by the successful candidates of the single ballot election of the Combined Electorate of Mongolia, Tibet and Chinghai connected with the Citizens' Convention.

Art. 6. The representative of the Manchu, Mongolian and Chinese Banners shall be elected by the candidates elected by the princes, dukes, hereditary nobles and other hereditary personages of the Banners belonging to the Special Central Electorate in connection with the Citizens' Convention.

Art. 7. The representatives of the Chambers of Commerce of the whole country and Chinese residents abroad shall be elected by the candidates elected by the candidates of the single-ballot election elected by merchants, artisans and industrial men possessing capital of 10,000 dollars or more belonging to the Special Central Electorate in connection with the Citizens' Convention, or those Chinese abroad being merchants, artisans and industrial men possessing capital of $30,000 or more.

Art. 8. The representatives of those who have done good service to the country shall be elected by the candidates of single-ballot election elected by the voters who have done good service to the country belonging to the Special Central Electorate in connection with the Citizens' Convention.

Art. 9. The representatives of the recognised learned scholars shall be elected single-ballot election by learned scholars, graduates from High or Higher schools after completing a course of not less than three years, others having qualification similar to the graduates named above, teachers having taught for two or more years in High or Higher schools, belonging to the Special Central Electorate in connection with the Citizens' Convention. All voters as classified in and from Art. 5. to the first class mentioned in this article of single-ballot election shall be those who have been examined by the National Election Examination Committee and have been duly declared legally entitled to vote.

Art. 10. The following rules shall govern the Superintendents of Elections of the Citizens' Representatives.

1. In the provinces the respective superior officials shall jointly supervise the election as Superintendents.

2. In the special administrative areas the superior officials concerned shall supervise the election.

3. Respecting clauses b, c, and d, of Article 3, the Director-General of the Board for Mongolian and Tibetan Affairs shall act as Superintendent.

4. Respecting clause e, f, g and h of Article 3, Minister of Interior shall act as Superintendent.

Art. 11. The polling stations shall be situated at the places where the Superintendents reside. When the appointed date arrives, the Superintendent shall convoke the electorate by summoning those who have reported themselves, and the election shall then proceed forthwith. The Superintendents of the provinces and other special administrative areas may, when circumstances require, empower the Magistrate to supervise the election of the Citizens' Representatives.

Art. 12. The date for the election of members to the Convention of Citizens' Representatives shall be fixed by an instructional mandate.

Art. 13. In settling the issue stated in Articles of this law by the Convention of Citizens' Representatives the initialled balloting system shall be adopted. The result shall be reported by the Superintendents concerned to the organ acting in the capacity of the Li Fa Yuan, which shall add together the votes of the whole country and ascertain what is the consensus of opinion of the Convention of Citizens' Representatives.

The balloting papers mentioned above shall be forwarded, after they have been checked. under sealed cover to the acting Li Fa Yuan.

The date of voting for the form of State shall be fixed by an instructional mandate.

Art. 14. The text of the question regarding the form of State to be balloted for shall be drawn up by the acting Li Fa Yuan, which shall first pass the same and then forward it to the Government, which in turn will forward it to the Superintendents, who shall announce the same on the balloting day to the representatives of the citizens.

Art. 15. Respecting the preparations in connection with the election and balloting as provided for in this Law, they shall be managed by the Bureau for the Preparation of the Citizens' Convention.

Art. 16. This law shall come into force on the day of promulgation.

On October 2 the draft bill was introduced to the Council of State, read the first time and then submitted to a committee for examination.

The regulations for the election of the People's Representatives were promulgated by Presidential Mandate on Friday, October 8, and immediately came into force. The arrangements for the elections were at once proceeded with and it is expected that by November 5 the various districts in China will have chosen their representatives. These men, upon whom is thrust the responsibility of deciding the fate of the Republic, will assemble in the various Provincial capitals about November 15 and they will vote on the question of whether a Constitutional Monarchy shall be established in China or not. If the majority decide upon a Monarchy a second vote will probably be taken as to whether President Yuan Shih-kai shall be the Monarch.

During the past two months many petitions have reached the Peking Government from various bodies and sections of the country, and as a matter of interest, and for purposes of record, we publish the following which were translated by the *Peking Gazette*:

Petition of the Military

PETITION of Wang Shih-chen, Minister of War, and most of the Military Commanders to the Great President requesting that means be adopted to consolidate the foundation of the Nation:

This Ministry has been in receipt of despatches and telegrams from the Chiang Chuns and military officers of the provinces, the various military organs of the Central Government and others to the effect that the republican system does not suit the circumstances of this Nation, and that during the past four years there have invariably appeared signs of decline and fall. Fortunately our Great President has always exerted his power and energy to save the Nation from the dangerous situation. It must be pointed out that alien pressure has grown stronger; and many things have caused us grave anxiety for the future. If no fundamental change be introduced, there shall never be permanent peace and wholesome government. A careful study of the situation of this Nation and the will of the people must at once convince us that the best method to be adopted at the moment is to supersede the present Republic by a Constitutional Monarchy, etc.; We, Shih-chen and others, have noticed that since the introduction of the Republic following the Revolution of Hsin-hai, societies and tangs have exercised an undue authority over the Nation. Violent characters have usurped power, allying themselves with *tufei* and bandits to inflict great misery upon the people. It is due to the Great President that internal disturbances have been suppressed by the Generals and troops sent by him and peace and order secured for the people. Lawless persons have made use of the doctrine of "liberty and equality" to entice the "stupid people." Officials, who are under the thumb of the bad gentry, have performed their work negligently. Military men have been at their wits' end to devise means for the defence of the Nation, and their lives have been constantly exposed to dangers of all kinds. Mandates and Regulations have not been obeyed and principles of morality have been "trodden under foot." It is not that the officials have not tried their best to enforce Laws and Regulations, but because the Laws and Regulations are not sound. We, Shih-chen and others, have carefully studied public opinion and observed the general situation of the time; and we have arrived at the conclusion that unless a fundamental solution of the problem is arrived at and the form of State be changed, there will always be trouble and disturbance. No progress will be made in administrative affairs, and the Nation will never become rich and powerful. Now the "hearts" of the military have united as if they were but one man and their opinions are alike. As they have all expressed their desires, it is not meet for us to tarry the communication of their request to the Great President. We hereby enclose a list of the names of military men in the provinces and the metropolis who have forwarded their petitions praying for the change; and we leave the same to the Great President to decide, etc., etc., etc.

(Signed) Wang Shih-chen, Minister of War, Tuan Chi-jui, Director of the Chiang Chun Fu, Liu Kuan-Hsiung, Minister of Navy, and a long list of General and Military Commanders, filling 6 pages of the *Cheng Fu Kung Pao* or "Government Gazette."

Petition of the Captain-Generals

PETITION of the Captain-Generals of the Cherim League and others to the Great President on the necessity for a change of the form of State:

Since the beginning of the World it has never been heard that there could be permanent peace and wholesome administration for a nation when the form of State is in conflict with the condition of the people. The Republic does not express the will of the people. After the Revolution of Hsin Hai the form of State was changed; but men of experience already expressed their anxiety at that time regarding the change. For the past few years the republican principle has been under experiment, and now we behold its failure. Consequently a few wise scholars lately raised the question of the Salvation of the Nation by the introduction of a constitutional monarchy. After a brief discussion the whole Nation has responded, as if the "shadow follows the substance" and the "echo answers the sound." This in truth evinces the will of the people. Mongolia, situated on a remote frontier, has always depended upon China, and therefore the peace or disturbance of China has a close effect upon our land. If no measures are taken to effect a change, the heart of the people will be disappointed and dangers of all description will arise; then not only China will be placed in a dangerous position, but there will be no hope for the salvation of Mongolia. We have of late gathered together our people in Mongolia for consultation; and we are agreed that China must be a monarchy and that the Great President, whose "sacredness" and civil and military ability have been respected unanimously by the people within the Confines of the Seas, must envisage the general situation of China without harbouring vain scruples to the end that the desire of the Mongolians for good government may be realised and great blessings secured for China. Otherwise, the foundation of the Nation will never be firmly established, the public mind will never be settled, and the future outlook of China will always be gloomy and dark. It is not the interests of Mongolians alone that will be injured, but the whole body of the citizens of China will equally and forever suffer. At the present critical time, whether the Nation will have order or the reverse depends wholly upon the right or wrong path to be trodden by the Great President who has always had the welfare of the Nation at heart. We earnestly pray that he will condescend to respect public opinion and arrive soon at the fundamental solution of the important problem. We respectfully await the order, etc. . . . We beg to state that the foregoing text has been telegraphed to the Great President, and we hereby submit this petition by the hands of our representatives, etc. . . .

(Signed) Prince Chi-mo-to-san-pi-leh, Captain-General of the Cherim League, and a number of Princes and Dukes.

Petition of the Navy

PETITION of Liu Kuan-hsiung, Minister of Navy, to the President requesting that the form of State be at once fixed so that the "heart" of the people may be settled:

On the 6th instant I received a telegram from the Chief of the Admiralty Office, Commanders of various naval stations and Captains of various men-of-war stating that "It is learned that of late the Chou An Hui has promulgated the doctrine of the change of the form of State. We being naval men have not dared to discuss things which are beyond the ambit of our sphere. We have, however, observed the will of the people in places where our men-of-war have visited and we believe that unless a constitutional monarchy is introduced, there will not be permanent peace and order. We have gathered together various Commanders and Captains to discuss carefully this problem, and our opinion is unanimous. Therefore we beg to submit our suggestions for transmission to the Great President for consideration."

The principal thing for a military or naval man is obedience, and his duty is to defend the Nation. While performing his duty with "fear and trembling," he should by no means try to interfere with the administration of the State. However it must be remembered that in the late period of transition, decisions were hurriedly made under special circumstances; but no thought was bestowed upon the historical traditions and the circumstances of this Nation. Should we continue in the present state, dangers will inevitably appear. It has been four years since the Hsin Hai Revolution, and all we have noticed during the period has been that the rebel *tangs* have exercised their influence and the people have been dragged into great misery and suffering. Fortunately by the Divine authority of the Great President, the bad elements have been cleansed out from within the Confines of the Seas. When we remember all the disturbances of the said period, our heart verily aches. What is the real cause of these troubles? The unanimous reply is that a republican form of State does not suit the condition of our Nation. We Kuan-hsiung and Others, in our tours of inspection at various places and the Captains of men-of-war who have visited ports, have collected the opinion of various localities and studied their conditions. and the unanimous voice we have heard has been one demanding that the fundamental solution of the present problem be at once made in order to prevent all future disasters. As we have thoroughly understood the above circumstances we cannot keep silence. As our Great President has been dowered by Heaven with great wisdom and benevolence, and as his merits and virtues are so self-evident that they have commanded the unanimous respect of the whole people within the Confines of the Seas who depend upon him for their existence, we crave that he should condescend to comply with the public desires in settling this fundamental problem to the end that the hopes of the living beings in the remotest Corners of the Seas may be realised, and the foundation of the Celestial Empire may be firmly established. As the question under issue is of so great consequence, we have dared to submit this petition without being influenced by any other consideration. We hope that the Great President will graciously deign to give a favourable consideration to this our humble prayer, etc., etc., etc.

(Signed) Liu Kuan-hsiung, Minister of Navy.

Petition of the Governors

TELEGRAPH PETITION of Chu Chia-pan, Governor of Chihli, and Others to the Great President requesting that the public desires be granted and the fundamental problem of the day be settled:

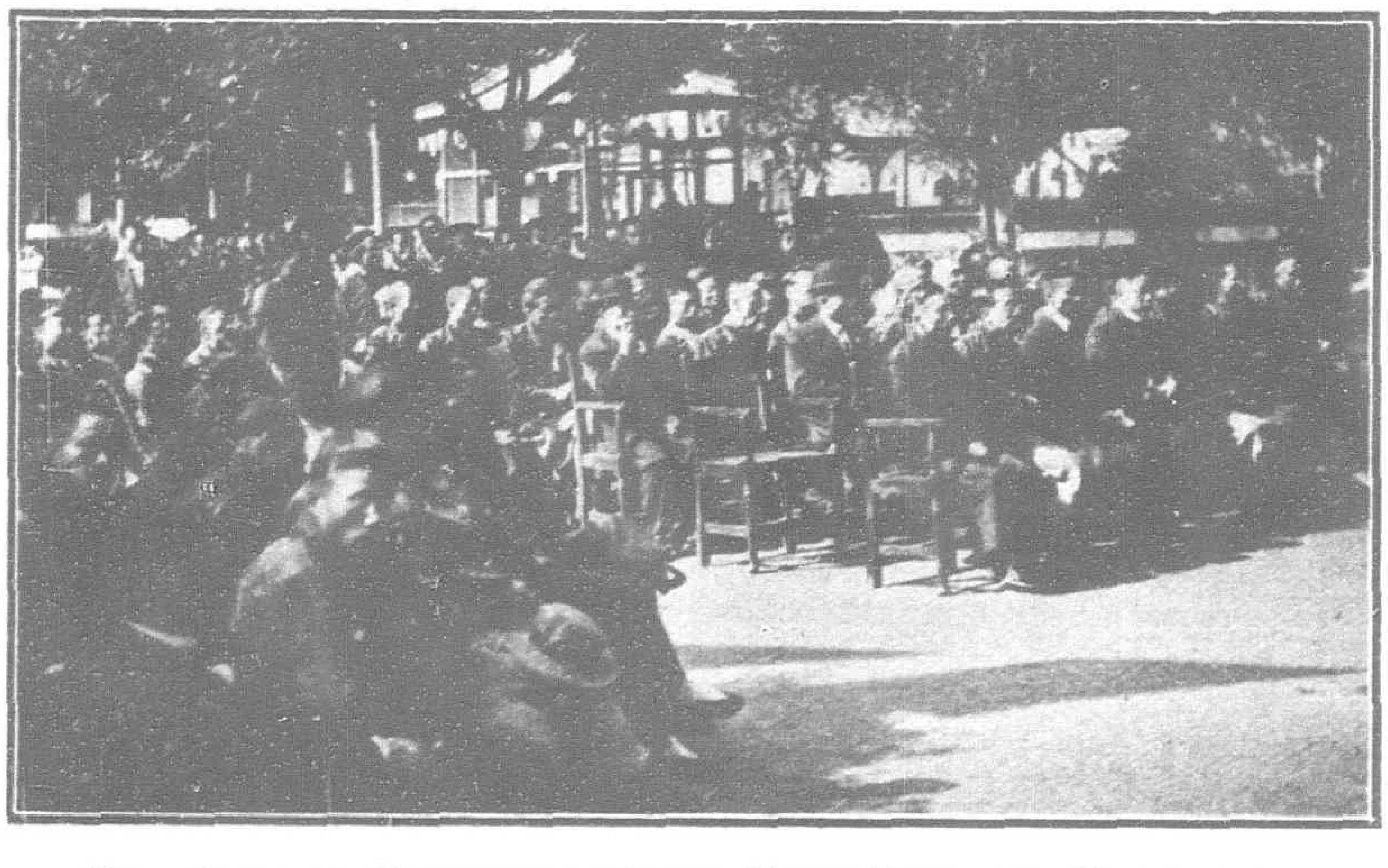
Since the question of Kuo-ti was raised, people everywhere have discussed the problem and they have been longing for a quick solution. As the patriots have discussed all the details in connexion with the unsuitability of a Republic for this Nation and the possibility of disturbance during the time of Presidential election, it is unnecessary for us further to dwell on the theme. By perusing the message of the Great President to the Acting Li Fa Yuan, particularly the passage in which it is stated that "With regard to the means of consolidating the foundation of the nation and strengthening the country, the best means can be devised if the opinion of the majority of the people is consulted," the people of the whole country can see the moderation and integrity of the Great President. It is certain that the firmness of the foundation of the Nation depends upon the "heart of the people." Now the whole people of this country have unanimously requested the change of the form of State; because they have for the past four years observed the misery and the unstable condition of the Nation. They have now been obliged to pray the Great President to make an important decision to lift them out of the misery of "water and fire" to the end that there shall be permanent peace and order in this Country. We, Chia-pao and Others, have noticed that since the time of Hsin Hai when the Great President took over the administration of affairs he has experienced many difficulties and dangers which, however, he has suppressed and overcome. His first object is and has been to save the Nation and the people; and it is known by all that he has been just and self-sacrificing. Now the hearts of the people are exceedingly anxious, and the Kuo-ti problem is awaiting solution. We pray that the Great President will comply with the wishes of the four hundred millions according to his usual desire of saving the Nation and its people. We pray that he may not leave the people to perish while showing his modesty. Let the question be at once referred to the Tsan Cheng Yuan in its capacity of the Li Fa Yuan for immediate solution.

(Signed) Chu Chia-pao and 21 other Governors.

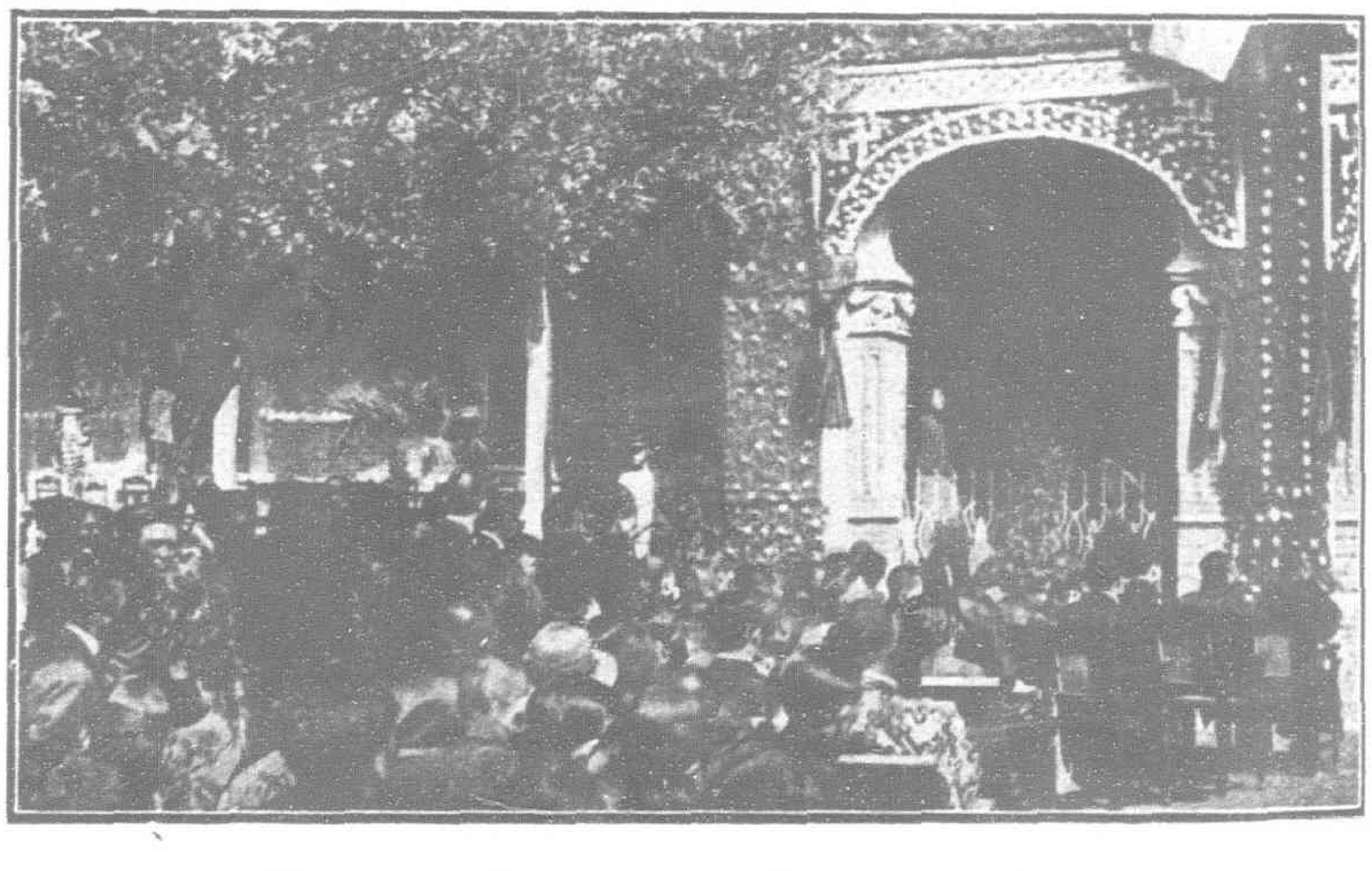
HOME PRODUCTS EXHIBIT AT PEKING

On October 1st the Home Products Exhibit was formally opened to the public at Peking, and it is gratifying to note the satisfactory manner in which the exhibition has been prepared on very short notice. It was only three months ago that the different provinces were notified of the intention of the Ministry of Commerce to hold an exhibit of home products in Peking, and every province did its share in making the exhibition a success.

The Exhibit is the result of a desire on the part of His Excellency Chow Tze-chi, Minister of Commerce, to awaken the people to the necessity of doing something to build up China's commerce and industry. His Excellency saw no reason to delay the holding of a national exhibition of home products and felt that whatever is done should be done now. The most prominent characteristic of this progressive Minister of State is to do things "now," and it is refreshing to find that he has instilled a certain amount of the "do it now" spirit into many of his associates.



THE OPENING CEREMONY AT THE HOME PRODUCTS EXHIBITION



STAGE FOR SPEAKERS AT EXPOSITION OPENING

One day in the Ministry some one remarked that it would be well to have an exhibition of home products at some future date as it would help materially in educating the people. His Excellency immediately stated that it was useless to postpone the date too long, and ordered that an exhibition be held in Peking to open on October 1st. Many of the officials and leading citizens laughed at the idea, but the Minister gave his orders, and the Home Products Exhibit was opened on October 1st.

Mr. Yung Tao was appointed President of the Exhibition by Presidential Mandate, and this gentleman, with the assistance of Messrs. Chang Yin-hsu and Wu Kuang-zu, both of whom are at the heads of departments in the Commercial and Industrial Commission, have made the exhibition a success.

It is interesting to note the manner in which these two gentlemen worked day and night to arrange not only for the display from the various Provinces but also for the entertaining of the great crowds. They are of very quiet and retiring disposition, and nothing done by them was done with the idea of praise. It is certain that without them the Exhibition would never have been a success, and the Minister knew his men when he allotted the work to them.

The main idea in having the Exhibition is to prepare for a permanent exhibit of each of China's industries and for the present to make Peking the headquarters. While Peking is by no means the commercial or industrial centre of China, it is felt by those who are interested that such an exhibit is needed in the capital city to educate those who are to govern China. Branch exhibits will eventually be built up in Canton, Tientsin, Hankow, Shanghai and Moukden.

The Peking exhibit will be under the control of the Commercial and Industrial Commission, and the building temporarily used for the present exhibition will be the permanent home of the Commission's Commercial and Industrial Museum. This Museum will be built up alongside the Division of Information, and it is hoped that the native and foreign merchants will soon be greatly profited by the work of these two departments of the Commission.

The exhibits included the bulk of the arts and crafts of China, and contained many articles of splendid workmanship and value. To foreigners in particular who are interested in the trade possibilities of this great country the exhibition afforded an excellent means for quick realisation of what is produced, and what is available for commercial utilization, and a permanent exhibition should become increasingly valuable as China is opened to trade.

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PRESIDENT YUAN SHIH-KAI AND THE MONARCHY MOVEMENT

The attitude of President Yuan Shih-kai towards the movement to re-establish monarchy in China has been the subject of much speculation. It is common knowledge that until quite recently His Excellency peremptorily declined to consider the question of a change of the form of government, although some of his most trusted lieutenants endeavoured to persuade him that a reversion to monarchy would be in the best interests of the country. It became evident, however, after the formation of the Chouan Hui (Society of Peace) that the monarchical movement had gained such strength that, if the President had set himself in open opposition to it, he would have run the risk of placing himself in a position in which he would be resisting the will of the people. In such circumstances His Excellency deemed it his duty to inform the Council of State, which had under consideration a number of petitions urging the re-establishment of monarchy, of the view he took of the question. Consequently a Presidential Message* was read at the meeting of the Council of State held on September 6, in which His Excellency stated that, although he regarded the proposed change as unsuitable to the circumstances of the country, the opinion of the people should be consulted.

The further progress of the movement and the measures taken to secure a popular expression of opinion are reported elsewhere. No further public utterance was made by the President until October 9, when Mr. William R. Giles, correspondent of the "Chicago Daily News," was received in audience and obtained an explicit and definite pronouncement from the President of his views in regard to the movement. In answer to a question relative to his future policy the President said: "As in the past, so in the future my policy will be a progressive one. From beginning of my official career I have always had three special objects in view.—

"(1) The establishment of a sound and far-reaching system of education in its widest sense.

"(2) The expansion of the country industrially and the exploitation of its great resources.

"(3) Thoroughly to reform the army.

"Early in life I realized that it was only by the institution of a sound system of education, which would reach to every corner of the great country, that real progress could be made, and the many necessary reforms effected.

"I also saw that to make this country strong within itself it was necessary that its vast resources should be developed on up-to-date lines and that every encouragement must be given to industrial and commercial enterprises.

"To enable the people to carry out these industrial and commercial enterprises, and to facilitate trade generally it was necessary that peace and order should prevail throughout the country. To ensure this it was necessary that the army should be efficient and disciplined, and this state of things could only be brought about after it had been thoroughly reformed. Although in many instances I was strongly opposed, I devoted considerable energy to these things. The schools and other educational institutions, the commercial training establishments, and the army I had trained under foreign supervision when Viceroy of Chihli many years ago, are evidence of some of the progressive ideas I have attempted to carry out."

The President laughed heartily when told about the reports in circulation that a re-establishment of monarchy would lead to a restoration of the Peacock Feather flummery of the Manchu Court, and said that there was not the slightest likelihood of the Peacock Feather being again worn in China. In regard to the allegation that it was feared that a period of reaction would follow the re-establishment of monarchy the President said that it was impossible for China to revert to the old order of things. A new spirit had been breathed into the people and nothing could stop their efforts for progress and reform.

When informed that the Young China Party and the students educated abroad thought that they would have no chance of official appointments and that only the old type of official would be employed in the event of a change in the system of government, the President said that as long as he was in power the widest scope would be given to foreign educated officials. He pointed out that it was through his efforts that the old system of literary examinations was done away with and a system of examination based on western methods substituted. He was one of the first officials to urge that Chinese should be sent abroad to study and in the early days of his official career he fully recognised the importance of employing foreign educated officials. As evidence of that he mentioned his employment of Tang Shao-yi, Liang Tun-yen, Liang Ju-hao and others more than twenty years ago.

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* Published in the September issue of the FAR EASTERN REVIEW.

In response to the direct question, what would be his attitude if it were the will of the people that the monarchical form of government should be restored, the President replied:—"During the past few years the question of the form of state has been raised several times, and the agitation has been gaining in strength. In my position, I, of course, firmly prohibited any discussion, giving my reason for so doing that as the Republic had been established such discussion could not be tolerated. Although those who raised the subject did not agree with me at the time, yet after my firm refusal the matter was dropped for the time being. But, during the past few months, the influential leaders of the country have practically unanimously again brought forward the subject. Citizens of the various provinces have again and again petitioned the Council of State. If repressive measures were employed there is great danger that, deprived of venting their opinion, untoward events may take place disturbing the peace and good order of the country, and involving the utmost danger to the general situation. Placed in this dilemma, I, on the one hand declared that the change in the form of state is unsuitable to the circumstances and on the other hand have striven to guide the body of opinion into legal lines to await the verdict of the people, and have forbidden rash or ill-considered steps. In this way not only can order be maintained, but the solution of the question will rest with the people, because the people being the sovereign and I their public servant, the decision of this fundamental question cannot be usurped by any other person, but must rest with the people. After having done this my duties and functions end here. How the question is to be solved in the future is a matter for the organ which represents the will of the people. Being the Chief of the Executive my concern is only to maintain order throughout the country. Since I have already, even at the risk of possible misconstruction, expressed my views, whether the people will hearken to me is not for me to ask.

"If it is the will of the people that the republican form of government remains in force, which is the thing that I desire, I shall be able with strengthened hands to carry out my policy of reform. If, on the other hand, they decide on the restoration of the monarchy, then, being their electee as President I shall not oppose their wishes."

Touching constitutionalism, the President said: "I was the first Chinese statesman to advocate a constitutional form of government, and no matter what is to be the future form of state, whether in office or not, I shall stand for a constitutional form of government in the fullest sense of the word. The legislature should have the fullest liberty to discuss the nation's affairs and to legislate freely. Whether the people decide for a republican or monarchical form of government, and I have any power, the Legislative Assembly will be established in the beginning of next year."

It would be hard to over-estimate the importance of this pronouncement by the President. Not only is what he said worthy of the closest attention, but great significance attaches to what he left unsaid. On the authority of an unauthenticated report of a conversation said to have taken place between the President and a certain official, it was alleged that the former would retire to a foreign country, probably England, if the country declared for a monarchy. It will be noted that he made no suggestion of the sort in the interview just quoted. From this fact it may be inferred that, although in accordance with etiquette His Excellency will endeavour to reject the honour that will be offered to him in the event of the country declaring for a monarchy, his objections may be overcome.

"Progress and Constitutionalism" is, we are given to understand, the motto that the President has adopted, and the views that he has expressed are designed to silence the insinuations that he is in favour of reaction and the re-establishment of the abuses of an autocratic monarchy. If he is compelled to ascend the Throne it should mean the establishment in China of genuinely constitutional government. Nothing could be more definite and reassuring than his declaration that whatever might be the result of the referendum he would stand for "a constitutional form of government in the fullest sense of the word." Equally satisfactory are the assurance that the Legislative Assembly will be established in the beginning of next year, and the President's determination that the Legislature should have the fullest liberty to discuss the nation's affairs and to legislate freely. The President's views cut the ground from under the feet of those who claimed that the re-establishment of monarchy would sound the death knell of progress and reform. It is evident that, if President Yuan Shih-kai is forced by the pressure of public opinion to ascend the Throne, instead of reaction setting in reform will be stimulated.

A SINO-JAPANESE PROBLEM

The new Sino-Japanese treaties involved a material change in the relationship between Japanese in South Manchuria and the Chinese authorities. By these treaties the Japanese secured certain privileges, the scope of which was broadly defined. It was inevitable that a more precise definition would become necessary to prevent disputes and misunderstanding, and pourparlers to this end are in progress. With goodwill and consideration shown by each side there is no reason why satisfactory working arrangements should not be arrived at.

One matter that is engaging attention is the situation in Chientao, a district north of the River Tumen. By an agreement between China and Japan signed at Peking in September, 1909, it was agreed that the Tumen should be recognised as forming the boundary between China and Korea. Previous to this agreement Japan had endeavoured to maintain a claim that the Chientao district was Korean territory, but was compelled by the logic of irrefutable evidence to admit that the claim could not be supported. An arrangement was made that the Korean people residing on the agricultural lands in the Chientao district should submit to the laws of China and be amenable to the jurisdiction of the Chinese local officials. A Japanese Consular officer was to be allowed freely to attend the Court where civil or criminal charges against Koreans were heard. This agreement in regard to Chientao is still effective, but it has to be borne in mind that the Koreans have since become Japanese subjects. The Koreans in this region for the past thirty years have been allowed to own land, a privilege that has never been given to other foreigners in China. At the present time the Korean population of Chientao, which is estimated at over 200,000 exceeds the Chinese population.

The annexation of Korea by Japan did not alter the status of these Korean settlers and they remained subject to Chinese laws and to the jurisdiction of Chinese courts until September, when the Japanese Consular authorities suddenly interfered and claimed jurisdiction over the Koreans. By the treaty relating to South Manchuria and Eastern Inner Mongolia, signed in May last, the Japanese consular authorities were to try and adjudicate upon cases in which the defendants are Japanese. The Japanese claim that the Korean settlers in Chientao are entitled to the privileges given by the treaty.

The Chinese maintain that the boundary agreement of 1909 is still operative, and they point to the provision in the new treaty which says "all existing treaties between China and Japan relating to Manchuria shall, except when otherwise provided for by this treaty remain in force." The Waichiaopu takes the view that the boundary agreement is one of the treaties that was not affected by the treaty of 1915. To understand the position clearly it is necessary to recall the circumstances in which the boundary agreement was concluded. As already stated, when the Japanese assumed suzerainty over Korea they raised certain questions in regard to the boundary between Korea and China. At the same time there were several questions respecting railways and mines outstanding between China and Japan. It was obvious that these matters should have been discussed separately, but Japan insisted that the boundary question and the railway and mining questions should be taken together. Owing to local troubles with Japanese soldiery, which resulted in the killing of Chinese policemen and soldiers and the wounding of officials, the Chinese authorities were constrained to agree to the demand for simultaneous discussion. Two agreements were the result, one the boundary agreement with an important railway privilege tacked on to it, and the other relating to railways and mines. If the material gains secured by the parties to the agreements be contrasted it will be seen that while China obtained a bare recognition of existing rights, Japan secured many new and valuable privileges and concessions, namely the extension of the Changchun-Kirin Railway to the Korean frontier, the option on the Hsinminfu-Fakumen line and the right to work the Fushun and Yentai mines. Japan gave an inadequate consideration in exchange for these privileges and concessions, and she now is endeavouring to repudiate this consideration. The Chinese Foreign Office holds that, while Koreans are now Japanese subjects, the Korean settlers in the Chientao region are in a special position as regards China. These settlers enjoy the rights of free residence and ownership of land that are denied to all other foreigners, including Japanese subjects, and at the same time they are subject to the jurisdiction of Chinese laws and Chinese courts, whereas other foreign subjects are not. A further proof that these settlers were not regarded as being on the same footing as other Japanese subjects is found in the provision in the 1915 treaty that Japanese subjects may *lease* land, whereas these settlers in the Chientao region may *own* the land they cultivate.

The Chinese Foreign Office points that in the new treaty, article 5 says—"The Japanese subjects referred to in the preceding three articles, besides being required to register with the local authorities passports which they must procure under the existing regulations, shall also submit to the police laws and ordinances and taxation of China." It is clear therefore that the Japanese subjects contemplated under this Treaty are those who have to procure passports under the existing regulations. On the other hand, the Koreans in the Yenchi (Chientao) region have never been required to procure passports. A more conclusive proof that these Koreans are not within the provisions of the treaty of 1915 but are still governed by the agreement of 1909 cannot be found.

During the negotiations on the new treaty Mr. Hioki, the Japanese Minister, admitted that the Korean settlers in the Chientao region did not come within the orbit of the treaty, but as, by Japan's express stipulation, no official minutes were kept of the negotiations, this admission is not on record.

There should be no real difficulty in arriving at a satisfactory solution of the problem. On moral grounds China certainly has a right to expect that Japan will treat her with consideration. Japan was paid a very handsome price for acknowledging the *status quo* in Chientao, and it would savour of diplomatic sharp practice to repudiate the acknowledgment while retaining the price paid for it. The legal point involved is whether the boundary agreement is one that remains in force in its entirety, notwithstanding the treaty of 1915. The Chinese say it is, the Japanese say it is not. Failing an agreement this seems eminently a question to submit to arbitration. There is no question of national honour involved, merely a legal point, and consequently the matter could fittingly be submitted to neutral arbitrators. If, as is rumoured, Japan insists that her view is correct and threatens to secure its acceptance by military force she will place herself in a very bad light before the world and will confirm the distrust and suspicion that was excited by her actions in the earlier months of the year. It is to be hoped for Japan's own sake that these rumours are false and that she will exhibit a reasonable and accommodating spirit and agree to arbitration if a satisfactory settlement cannot be otherwise attained.

THE FOURTH YEAR DOMESTIC LOAN

The Ministry of Finance at Peking has officially announced that the Fourth Year Domestic Loan of $24,000,000, Mexican currency, has been over-subscribed. The subscriptions amounted in all to $25,933,425.

The successful flotation of this loan, following as it did so closely upon another loan for a similar amount, is regarded as particularly gratifying by the Chinese government. By the over-subscription of the loan the people of China have given a further demonstration of their trust in their administration. The loan was issued at 90 and carries six per cent interest, which is by no means unfavourable in view of the world-wide financial stringency that prevails. When creditor nations such as France and Great Britain are paying as much for their loans as five per cent., it is a good testimonial to China's credit that she can obtain money at only a point higher.

This loan and the previous one do not constitute any real increase of China's indebtedness. The proceeds have been and are being used to pay off other loans bearing high interest. Consequently China's financial position has been improved, not only morally by showing that the Chinese people have confidence in their government, but materially by decreasing the annual interest charges. It is interesting to observe that substantial contributions to the Fourth Year Domestic Loan came from the United States, Canada, Australia, New Zealand, Cuba and other places where there are colonies of Chinese.

THE CHINESE CIVIL SERVICE

A number of Presidential Mandates relating to the Chinese Civil service have recently been promulgated. In his prolegomenon the President points out that when the change of government caused by the Revolution took place all the former systems and practices of appointing and promoting civil servants were abolished. The administration had suffered in consequence. Certain measures had already been taken to improve conditions, but they had not yet been strictly enforced. "Consequently there has not yet been any fixed standard for the appointment of officials and those who make the appointments can very easily be influenced. Intrigues, nepotism and other bad practices have gradually come into the system. This is not the way to encourage integrity and to command respect for official posts."

The President continued that he had decided to fix a certain standard of qualification, and to that end had promulgated Mandates on the High Civil, Diplomatic and Consular, and Judicial Examinations, Regulations on Applications for Diplomatic and Consular Examinations, and on Applications as referred to in Article 3 of Judicial Examinations, Mandates on Ordinary Civil Service Examinations, Commissions for High and Ordinary Civil Examinations and Recommendations for Civil Service Appointments, Regulations on the Ratification of the qualification of Candidates for Diplomatic and Consular Service, Mandates on the Procedure of General Civil Appointments of officials of Chien Jen (selected), Chien Jen (recommended) and Wei Jen (appointed by high officials) classes, on the Enforcement of Civil Appointments and on the number of cadets in Civil Service, and Regulations on the Examination of Scholars.

After explaining the objects that it was sought to attain, the President proceeded: "After the promulgation of the abovementioned Mandates and Regulations it is necessary that some time should be allowed for making due preparations for their enforcement, and consequently we have promulgated at the same time the Mandate on the enforcement of the Civil Appointments to make up the deficiency. Appointments will be given very carefully and can only be obtained by steps and seniority. Thus there will not be allowed corruption and irregularities in connection with recommendations, investigations, etc."

On several occasions during recent months we have emphasized in these columns the importance of the reformation of the civil service system in China. Good results could not be expected as long as appointments and promotions were simply matters of influence. Those who held posts have always been faced with the possibility that the retirement or transfer of their political chief would entail the loss of their positions. With the tenure of office so insecure it was not to be expected that officials would throw themselves whole-heartedly into their work, nor that the best man would seek office on such conditions. Other countries have learned from experience that it is impossible for the administration to be efficiently conducted unless the officials be capable and honest. They have, therefore, made appointment to the service subject to proof of capability, and have secured honesty by paying officials adequate salaries and giving them reasonable security of tenure and assurance of promotion. In the past this has not been the principle on which China worked. The suitability of a man for any particular post was judged not so much by his qualifications as by his acceptability to the particular political clique that had the bestowal of the post. That China has many capable and trustworthy officials in her service is remarkable in the circumstances, but it has been in spite of, and not due to, the system that has hitherto been in vogue.

It is encouraging to find that at least a start has been made to institute a better system. A great deal of discussion has been taking place about the form of government that is most suitable for China, but of no less importance is the character and capacity of the officials who, to the unlearned, in themselves constitute the government. In no other country than China, probably, is it of greater importance that the officials should be capable and trustworthy men. Much of the unrest and many of the local uprisings that have checked progress in the past in China have been caused by the employment of men who united unfitness with dishonesty. Where the officials are competent and upright the Chinese have shown themselves extraordinarily amenable to law, and this has been strikingly proved in foreign countries in which Chinese colonies have been formed. The new Mandates, if they accomplish the objects that the President has in view, should do a great deal, not only towards improving the morale of the Civil Service and increasing their usefulness, but also towards improving the condition of the people as a whole. Consequently these Mandates must be regarded as a very significant manifestation of the intention of the President to carry out an effective policy of reform.

One of the most important reforms that will be brought about by the new regulations will be the cessation of wholesale appointment by "recommendation." This method has resulted in flooding the country with "expectant" officials. The time-honoured practice has been for any official who had himself gained an important post to recommend every one who had any kind of claim upon him for positions in the government service, quite irrespective of their qualifications. All that is to be changed. The privilege of recommending officials is to be strictly curtailed, and when it is exercised precautions will be taken to prevent its abuse. Thus no official below a certain grade will have the privilege of recommendation, and even in such cases these officials will not be permitted to nominate more than two candidates. Moreover those nominated will have to undergo a stiff examination before they can receive an appointment.

This examination will be conducted by a special board of twelve or fifteen members, the chairman of which will be the Secretary of State. It may be assumed in these circumstances that there will be very little prospect of incompetent men entering the service by recommendation. This one huge breach in the Civil Service wall, through which all sorts of undesirable outsiders entered the citadel and lowered the morale of its garrison, has, it is hoped, been repaired, and the postern gate that marks its former position ought to be so vigilantly guarded that none may enter unless he knows the pass-word. The advantages that will attend the adoption of closing the door to nepotism are incalculable. The service should not have to bear the dead weight of a large mass of incompetents, and the civil servants should be relieved of the danger of unfair competition from men who could secure promotion by influence.

A necessary corollary to the cessation of promiscuous appointment by recommendation is the protection of men in the service from unfair treatment. If a man has passed the prescribed examination and received his appointment, it is obviously desirable that he should know that his retention of his position and prospects of promotion depend entirely upon his good behaviour and diligence. For the future no official will be liable to summary dismissal without given cause, and if he should deem that he has been unfairly treated he will be able to demand the hearing of his grievance by the proper tribunal. This should go far towards giving the civil servants the sense of security that is essential if they are to devote themselves wholeheartedly to their duties.

LAICHOWFU SOAPSTONE QUARRIES

Laichowfu is known all over China on account of the soapstone quarries near by. The crude material is brought from the hills, 5 miles away to the east, to the villages, where it is chiseled and scraped into idols, slate pencils, and innumerable toys and designs of every description. The chips and powder are made up into small square cakes or shoe-shaped molds, and marketed for use as whitewash, being very extensively used as such in China.

All over northern China may be seen the roadside monuments of the Laichowfu marble. The elaborate designs in marble of the Lama Temple, Yellow Temple, Hall of the Classics, Confucian Temple, the covered and the open altars in the Temple of Heaven, the Forbidden City, and the Agricultural Temple—all in Peking—as well as of the Summer Palace in the Western Hills and the Ming Tombs to the north of the city, could very easily have been worked from the Laichowfu quarries, so identical is the quality.

All along the route from Hwanghsien to Laiyang, via Laichowfu, Changi, Weihsien, and Pingtu, there is considerable cotton reeling and spinning. At Laichowfu a small cotton factory which is turning out nicely woven blankets, the Changi and Laiyang districts being engaged quite largely in silk spinning and reeling, the latter place producing about 20 pretty shades of thread. Silk is also produced around Kiaochow.

These cotton factory looms, like the silk looms of Ch' Hsia, are homemade, but are far superior to the latter, in that they turn out about five times as much daily. From a cursory examination, the only difference in construction seemed to be in the shuttle, which was automatic in the one and propelled by hand in the other.

From Laichowfu to Pingtu via Weihsien straw braid is locally manufactured. Shaho is the principal market. Numerous Chinese agents at this city engage in buying this product from the small producers and send it down to Tsingtau.

Quite a business is also done in the donkey markets of Laichowfu, Laiyang, and Chefoo.

Outside of Chefoo Mexican dollars are the only reliable medium. The stores and native banks in the suburbs of Chefoo do not care for paper money. A personal check on the Chefoo bank would be readily accepted at Hwanghsien, but notes are so rare—60 miles from Chefoo—that no one wants them, all preferring cash, coppers, or silver, and will not accept outside notes if they can help it.

Mexican dollars are accepted everywhere after shroffing, it being no insult to test the coin in your presence, as it is the invariable custom. All large concerns employ a shroff for this purpose, as there are so many slightly debased as well as spurious coins in circulation.

IMPROVEMENT OF CHINA TEA

Establishment of Experimental Stations and Subsidies

It would appear that the Chinese Government is at last about to take steps to revive the rapidly declining tea trade, which used to be, and still is, of great importance to the country. Before the advent of the Indian and Ceylon teas China tea held the foreign markets, but for various reasons the trade has fallen off and the loss thereby occasioned is now being severely felt.

In order to improve tea production the Government has decided to establish an experimental station in Anhui province, with forty sub-stations at a cost of, at the beginning, $15,808 per annum. It is hoped that by virtue of the establishment of a model station and the inauguration of an educational campaign, by lecture courses and subsidies, to improve 360,000 tea bushes and plant 470,000 new ones in the first year. The details of this scheme are given in a memorial, published below which was presented by the Minister of Commerce and Agriculture to the President. The evident desire of the Minister of Commerce and Agriculture to reform this trade brings to mind the agitation which the late Mr. H. T. Wade, of Shanghai, used to wage with the hope of seeing the China tea restored to its proper status. In addition to the improvement of the plants, Mr. Wade urged several other points, and these might well be regarded by the Government. He contended that more might be done for the improvement of China tea if shippers had such invested interest in the article as would give them some control over it *ab initio*. In India and Ceylon, he pointed out, everything belongs to the planter: land, produce, machinery, besides control over the manufacture. It is in his power to make such quality of tea as he may have a special market for. In his hands lies the power to increase or reduce the output and to regulate shipments, and a combination was actually entered into by the Indian and Ceylon growers to adopt a common policy to regulate the quantity made, shipped and sold on the London market. Growers are no longer independent units but an organised body acting in concert with a definite aim. In China it is a case of each shipper for himself, continued Mr. Wade. "It is only those who have witnessed the opening of the Hankow tea market in the month of May who can form an idea of the conduct of the business. They will have seen the extraordinary and irregular prices paid, and the speed with which the article is shipped off to markets too often quite unable to deal with more than a moderate quantity, a speed which may be gauged by the fact that 600,000 half chests out of a possible total supply of 800,000 half chests of Congou are afloat within the very limited time of six weeks. And in due time from across the seas comes the effort to sell with the result that such fluctuations in prices occur as are unknown and impossible in any other article of produce in the known world. It is this absolute inability to control prices in any degree which has driven the genuine old exporter from the field and is one of the causes of the decline of the China tea trade. To such fluctuations the British grown article is never subject because shipments are regulated, and the quantity offered for sale at one time on the home market, although large, is never excessive. The cost of production in India and Ceylon varies but little. A good season may bring out a larger supply of leaf than usual, and so lessen the cost of the article. In China neither quality nor quantity materially affect prices which alone are determined by the caprice of the buyers, for the teaman once having brought his produce to market must perforce sell it or ship it. And he is much too wise to do the latter.

"While there is no possibility of control, the China tea growing not being centered in a few men as in India, it may be possible for the Tea Guild to assist the Government in making not only a better product, but also in respect of regulations of prices and output.

"(a) This end might in a measure be attained could some combination, such as that which regulates output and shipments in India, be entered into not to pay such inordinate prices for that great bulk of tea which fills up the space between choicest and commonest descriptions.

"(b) In India there is no tax on the production or export of tea; in China there is a specific export duty of $1.25 per picul, based on an average value of Tls. 25, and a series of taxes on the article from the place of production to the port of shipment, levied by the local officials and generally known as likin, which amounts on the average to rather more than the export duty, 'with something added for irregular levy and delay and loss of interest.'

"Obviously no industry thus burdened can compete with a rival free of all burden. And strange to say, with the knowledge that these internal taxes are illegal and abolished by Treaty, which in their place imposes a transit duty, namely, $0.625 per picul, the natives are content to be mulcted rather than incur the displeasure of the local officials, and the consequent penalties and lets and hindrances to the prosecution of their legitimate trade."

On the question of imparting greater strength to China tea, Mr. Wade wrote:—

"At first sight it does not appear very obvious how strength can be imparted to the leaf, but when it is suggested that this end may in a degree be attained by returning to the leaf before its final firing some of that precious sap wherein lies the strength now largely lost through the existing native methods of manipulation, the experiment should certainly be worth the trial. Inventive native genius should surely be able to manufacture a rolling machine to be worked by hand which would answer all the purposes which the Indian machine is supposed to meet, or in any case to devise some means whereby the loss of strength of the tea can be minimised. For great and natural original strength is in the leaf undoubtedly. Again, greater strength and increased productiveness might be ensured were those tactics followed which have been so successful in India and Ceylon, viz., replacing worn-out sections of the patches or gardens by newly planted areas on more fertile soil, and by more scientific manuring. The system now adopted in India is called 'Green manuring.' It has been ascertained that leguminous trees, shrubs and annual green crops provide the organic matter and the nitrogen required by the tea bush for its full development. And China is rich in this resource, with her bean and pea fields, her sesamun and kindred vegetable plants. A little local official pressure, the terror of the agriculturist's life, in this direction would soon result in a productiveness without increasing planting which would benefit both grower and tax collector alike.

"It is a time honoured belief that because tea arrives in almost unwieldy quantities in the markets of China within a month that it must be philanthropically shipped off without delay to relieve congestion. Further, buyers are actuated by the fear that if they do not buy tea directly it is offered on the market they will miss their opportunity, and be left out in the cold until another tea season comes round. The result of these ill-considered, hurried shipments, while usually disastrous, is at the same time preventable. Why, for instance, cannot the native tea man be made to hold his stock in China for a few weeks instead of delegating that task to the foreign exporter, who has to carry his holdings, whether in America or England, for months, and sometimes for years? Here, again, a lesson may well be learnt from the Indian shipper. Rational combination to retard shipments should not be impossible.

"There can be no question of the superiority of China tea in the æsthetic properties of aroma and flavour, while it is distinctly a more wholesome beverage and superior dietetic nutrient. While Indian, Ceylon and Java teas contain an excessive amount of tannin, the fruitful mother of dyspepsia, only an insignificant amount is found in China tea. The consensus of opinion of the leading medical authorities in the world has proclaimed in favour of China tea above all other teas. These important facts should be brought home to the great tea drinking public of Great Britain in some less lymphatic manner than that adopted by the self-constituted China Tea Association. China tea should be advertised, as Indian and Ceylon teas have been advertised, and as strikingly and appealingly as the merits of patent medicines are made known. Even for this purpose should a voluntary tax be levied as in India. China must vigorously fight India, Ceylon, and Java with their own weapons if she would get back even a part of that trade which once, and not so long ago, was all her own.

"An independent step, but one quite in the right direction, is now being taken by a private enterprise well fitted financially and with ability to carry its project to a successful issue. The Pure China Tea Importing and Distributing Company with its buying agencies in Hankow and Shanghai, and a London distributing office, are preparing to place in the hands of those requiring it strictly choice pure China tea packed in China and distributed in original packages only at most moderate price. With the aid of intelligent pushful travellers and a strong advertising appeal to the common sense of the great body of tea drinkers there can be little doubt of ultimate success. But this is a step which, at its inception, ought to have been taken by the China Tea Association who should have canvassed for funds from all those interested in the amelioration of the trade, and so get them financially interested in the new departure. But there is yet time for that august body to take the matter in hand.

"I am strong in the belief that with a scientific enrichment of the soil and a more intelligent attention to the growth and cultivation of the plant the resultant extra-productiveness would largely tend to the cheapening of the initial cost of the leaf—a cost that will be further lessened by the removal of the present illegitimate internal burdens; that a saving of the wastage now occurring by reason of the ancient native method of manipulation will impart a much desired strength; and that, finally, with an article not comparing unfavourably in cost and strength, but comparing only too favourably in wholesomeness, quality and flavour, with the British grown teas of India and Ceylon, properly regulated shipments, and persistent, strenuous, intelligent advertising, China may not unreasonably look forward to a future bright with promise for her naturally magnificent industry."

Tea Improvement in China

The following Memorial was presented personally to the President by the Minister of Agriculture and Commerce for the Improvement of the Cultivation and Manufacture of China Tea:

We have the honor to present this memorial regarding a plan for the improvement of the cultivation and manufacture of China tea, and crave Your Excellency's approval.

Of all the exports from this country tea has been and is one of the principal commodities In recent years Chinese black tea has been largely displaced in foreign markets by that of India, Ceylon, and Java, while Chinese green tea has been displaced by that of Japan. The volume of exports of the two kinds of tea has decreased to an alarming extent. The obvious reasons for this decline are first, the lack of proper organization for the direct distribution, and, second but more important reason, the non-adoption of modern scientific methods of cultivation and manufacture. Investigations have shown that in almost all the tea-growing districts the bushes are either too old to produce good leaves or the soils are becoming barren. It is to be feared that such a state of affairs will mean the gradual deterioration if not the complete extinction of the industry in China. While our competitors, the tea merchants of India, Ceylon, Java and Japan are encouraged and assisted by government subsidies, our tea planters and merchants are conservatively following the old methods of cultivation and distribution. Furthermore, our tea manufacturers are slow to improve their methods and our tea distributors have a very limited knowledge of the industry. It is thus practically impossible for China tea to compete successfully in the foreign markets.

Because the tea market in Europe is very favorable this year, and because the tea production in this country is small, the tea merchants have prospered, but the planters have fared as badly as in previous years. This Ministry has already instructed all the commercial associations to encourage the tea merchants to follow the practise in vogue in India and Ceylon, namely to combine tea cultivation and tea manufacture. They were also instructed to advise the cultivators to increase the number of bushes.

The Ministry will first establish in Anhui Province a tea experiment station to encourage and subsidize the private planters, who will be appointed as officers of the sub-stations. At these stations new bushes will be planted, old ones improved, new methods of fertilizing and pruning of the plants practised, and efficient and cleanly methods of picking, rolling, firing, and sifting of the leaves adopted. These stations will serve as models. In addition lecturers will be engaged to spread the new methods of cultivation and manufacture in the different tea-growing districts. In this way, it is hoped that the production of tea will be increased, the flavor improved, and higher prices obtained for the product. A few years later we believe that the lost interest may be revived. Such methods of encouragement would not involve much expense, while great results can be expected. We hereby beg to propose the following plan with a view to the improvement of the tea industry:

1. The object of the Tea Experiment Station is to encourage and guide the tea planters and manufacturers to adopt new and scientific methods of cultivating, manufacturing, fertilizing, pruning, picking, rolling, fermenting, firing, and also to increase the cultivation of additional plants.

2. The work of the Tea Experiment Station shall be divided into two departments:—(a) Cultivation, (b) Manufacture.

3. The scope of the work of the Station shall not be too large, while the number of sub-stations shall be numerous.

4. To carry out experiments in the manufacture of tea, leaves picked from the sub-stations and also leaves purchased from progressive cultivators shall be utilized.

5. The Experiment Station shall be established in Keeman, Anhui Province. Sub-stations shall be first established in Keeman and Kintuck, Anhui Province, and in Foliang, Kiangsi Province. In the tea-growing districts in Hunan, Hupeh, Chekiang and Fukien, stations will be established later on.

6. The Sub-stations shall not be managed by the Chief Experiment Station, but they shall be subject to the following three regulations:—

(a) For planters owning their own land. Since most of the cultivators are ignorant and conservative it is a difficult matter to get them to improve their tea cultivation. Planters, who were formerly either students of the Nanyang Tea Industry Training School established by the Tea Commission sent out to India and Ceylon ten years ago, or graduates from the Preparatory Department of the same school, or graduates of local Agricultural Schools shall be appointed sub-stations officers. As many of these former students were natives of the provinces of Anhui and Kiangsi and in many cases sons or relatives of tea planters and manufacturers, they are competent to undertake the proposed work.

The work expected of the planters shall be the application of the scientific methods of cultivation of their own plantations, of the fertilizing, pruning of and the picking from tea bushes. These plantations shall be recorded as sub-stations of a certain village in a certain district. Such plantations shall serve as models. In return, the planters shall receive a certain monthly allowance.

(b) For planters who rent public lands. Students who have been at the Tea Industry Training School above mentioned or graduates from local Agricultural Schools, but who own no tea plantations, shall be provided with public lands rented to them and shall be appointed to take charge of the cultivation of such lands. In return, they shall also receive a certain amount of monthly allowance. They shall themselves develop the land with their own capital but must follow the methods advised by the Experiment Station. These plantations shall be recorded as sub-stations of certain village located in certain district.

(c) For combining tea merchants and tea planters. In order to improve the tea industry one of the best methods is to encourage the combination of cultivation, manufacture, and distribution of the products by one man or concern. It is well known that the tea merchants have capital but their inability to stand the hardship of agricultural life has hitherto restrained them from entering into tea planting. If they did undertake this, the expenses of manufacture, etc., would really be comparatively small, and the capital invested would not be subjected to great risk. We therefore propose to interest the tea merchants in the cultivation of tea, by encouraging them with some form of rewards. Individuals or companies who start plantations will be supplied with tea seeds gratis, and the improved methods of cultivation will be taught either by the officers of the Experiment Station or the sub-stations. Persons cultivating 200 mous or more shall be rewarded according to the regulations of afforestation.

7. Cultivators who own and cultivate tea plantations and who act as sub-station officers shall be subsidized according to the following scale:

(a) Cultivators of more than 4,000 bushes shall receive $2.00 per month.
(b) Cultivators of more than 8,000 bushes shall receive $4.00 per month.
(c) Cultivators of more than 12,000 bushes shall receive $6.00 per month.
(d) Cultivators of more than 16,000 bushes shall receive $8.00 per month.
(e) Cultivators of more than 20,000 bushes shall receive $10.00 per month.
(f) Cultivators of more than 24,000 bushes shall receive $12.00 per month.

Note. The subsidies are given according to the number of bushes grown and not according to the number of mous, because the number of bushes grown per mou varies greatly in different localities. The Experiment Station shall pay the current market price for leaves purchased for manufacturing tea.

8. Cultivators who rent and cultivate public land and who act as sub-station officers shall be subsidized according to the following scale:

(a) Cultivators of more than 25,000 bushes shall receive $15.00 per month. In addition $30.00 will be paid for the opening of the land in the first year.
(b) Cultivators of more than 50,000 bushes shall receive $30.00 per month. In addition $60.00 will be paid for the opening of the land in the first year.
(c) Cultivators of more than 75,000 bushes shall receive $45.00 per month. In addition $90.00 will be paid for the opening of the land in the first year.

Note. From the fifth year after the planting of the tea bushes the monthly subsidies to be paid shall be the same as that paid to owners of plantations. The tea leaves purchased by the Experiment Station from such cultivators shall be paid for at the rate of 80 per cent of the market price, but from tenth year on full market price shall be paid.

9. According to the present plans 40 sub-stations shall be first organized. The estimated annual expenditure for the subsidies is as follow:—

(1) 30 sub-stations for cultivators who own tea plantations:—
Class (a) 8 sub-stations of over 4,000 bushes each $192.00
Class (b) 6 sub-stations of over 8,000 bushes each $288.00
Class (c) 6 sub-stations of over 12,000 bushes each ...$432.00
Class (d) 4 sub-stations of over 16,000 bushes each ...$384.00
Class (e) 3 sub-stations of over 20,000 bushes each ...$360.00
Class (f) 3 sub-stations of over 24,000 bushes each ...$432.00
(2) 10 sub-stations for cultivators who rent public land:—
Class (a) 4 sub-stations of over 25,000 bushes each ...$720.00
Class (b) 3 sub-stations of over 50,000 bushes each ...$1,080.00
Class (c) 3 sub-stations of over 75,000 bushes each ...$,1620.00

The above estimated annual subsidies total $5,508.00 and the additional $300.00 subsidies for opening the land give the grand total $5,808.00.

10. The merchants who grow tea themselves, country people and gentry who organize tea-growing companies and who ask for advices and guidance from the Experiment Station shall not be subsidized.

11. At the beginning the Experiment Station will assemble students; the local gentry and country people, who desire to improve the tea industry, will offer short courses on tea cultivation, tea manufacture and progressive methods of the industry in India, Ceylon, Japan and Java. Sub-station officers will be selected from these students. After the harvest every year these students as well as the sub-station officers will travel to neighboring places to conduct lecture courses on tea.

12. There will be a director of the station and three technical assistants, with the director as the technical chief.

13. All the buildings of the Station will be simple; the lecture hall will be fairly large, but residential quarters will be simple and economical.

14. At present no machinery and modern factory are required for the manufacturing of tea. During the tea season spacious native factories can be rented for the purpose. Tea leaves are purchased from the sub-stations and from cultivators who have practised improved methods. The leaves purchased will be manufactured into tea by improved hand methods of rolling, firing, packing, etc. The product will be shipped to Shanghai and Hankow and contracts will be made with foreign purchasers. The estimated expenditure of the tea manufacture will be about $15,000 which will be borrowed in April and repaid in the following June from the proceeds of the sale of the product.

This modest expenditure will be able to conduct the model stations, educational campaign, lecture courses and to include the granting of subsidies. 360,000 tea bushes can be improved and 470,000 new bushes planted in the 40 sub-stations during the first year.

The distribution of the sub-stations in various places is far more effective than the concentration into only one station. These 830,000 bushes will produce more and better leaves and tea, for which better price can be expected. After the tea industry has been improved by the above methods in the districts where the stations are located, the funds will be transferred to another district and the same campaign repeated. Thus another 830,000 bushes can be improved or planted and similar increase of profits may be expected. Thus encouraged by the Government, the merchants, the gentry and the common people will be able to cultivate and improve tea for themselves. And hereafter other tea merchants and tea planters will be able to follow suit. In this way the China tea industry will no doubt be rejuvenated within a few years.

The estimated annual expenditure of the Tea Experiment Station:

(1) Extraordinary expenditure for the establishment of stations $4,000.00
(2) Annual expenditure ($984.00 per month)...$11,808.00
  (a) Experiment Station ($500.00 per month) $6,000.00
  (b) Sub-stations ($484.00 per month) $5,808.00
(3) Funds to be borrowed in April for the manufacture of tea and to be repaid in the following June ...$15,000.

Total $15,808.00

A Chinese Tea Association

To further the efforts of the Government the tea merchants have formed a Chinese Tea Association and a draft of the regulations have already been approved by the Ministry of Commerce, Agriculture and Industry. The essential projects of the Association for pushing the sales in foreign countries are outlined as follows: (1) To establish general offices of the association in Shanghai and Hankow; (2) To establish tea experiment grounds at important cities for studying and improving the methods of planting, picking, treating, and heating the leaves, and of creating new markets; (3) to translate articles of foreign newspapers or from foreign books, dealing with the tea business for the information of the Chinese tea merchants; (4) to organise a special bureau to fix prices for the different varieties of tea, to lay importance on tea trade marks, and to prohibit the manufacture of counterfeit goods; (5) to unite all tea merchants throughout the provinces in order to carry on the business in uniformity for the common interest of the tea trade; (6) to appeal to the President and the Ministry of Finance for protection in the tea market; (7) to organise a general company in China for undertaking the export business; (8) to carry out a vigorous campaign of advertising Chinese tea in foreign markets; (9) to write articles on Chinese tea in different languages to be published in pamphlets or in foreign newspapers so as to remind the world of the merits and reputation of the Chinese tea; (10) to establish branch selling shops in all the important cities in foreign countries so as to be in direct touch with the foreign markets; (11) to study the tastes of the foreign customers and to give away more samples of Chinese tea to foreign tea-merchants; (12) to select better seeds and to increase the output of tea.

THE STRAW BRAID INDUSTRY OF SHANTUNG

In 1898 almost the entire straw braid trade of Shantung was done through the old established business houses of Chefoo, but with the completion of the railway from Tsingtau to the interior of the province, and the improved facility for transportation of braid thereby, the trade has been entirely diverted to Kiaochow, with the consequence that Tsingtau is now the largest straw braid emporium in China.

The straw generally used in the province of Shantung is that secured from wheat. Small farms are found throughout the entire province, varying in size from 20 yards square to sometimes several acres, but are never found covering large areas as in the United States. The cultivation is carried out in the same manner as has been done for hundreds of years. No special precautions are taken to protect the wheat or to improve its quality, and the crops are dependent entirely upon weather and other natural conditions. The methods of cultivation have not passed the rudimentary stages. The manufacture of straw braid is confined to certain districts, and the quality of the braid produced is largely dependent upon the condition of the year's crop of straw. The crop of straw is cut with hand knives, the wheat or barley is sold for milling purposes, and the straw bought up by straw dealers.

These straw dealers sort the straws into lengths and qualities. The straws from the farmers are approximately 4 feet in length, but up to one foot from the roots is considered unusable, and the foot or so near the top of the stalk, after cutting off the head, is used for thatching purposes, and is sold by the straw dealers to the country people for that purpose. This leaves 2 to 2½ feet of straw, which is available for making braid. The straw dealers clip from the straws all pieces which can be used for first quality braid, pieces varying in length, 4 to 5 inches being generally sufficiently clear and perfect for this purpose; occasionally longer pieces are found, and in years when an exceptionally good crop has occurred, these longer pieces are more frequent. The remainder of the straw is used for the manufacture of the poorer qualities of plait.

The straw dealers dispose of their straw to the plaiters either as whole pieces of straw of the required quality, or split into strips. For the splitting process, small roughly made knives are used, having a point about one inch in length, which is inserted and the straw easily split into two, four or seven pieces of equal length.

The plaiting of the braid is carried out in certain districts of Shantung, and especially in and about the Sha River, known as the "Sha-ho district." This district consists of a series of small villages and farms, and it may be safely stated that almost the entire community, men, women and such children who are large enough to know how, are engaged in the plaiting. Hardly a villager can be seen without his bundle of straw under his arm walking about the streets or sitting upon his doorstep or that of his neighbor continuously plaiting.

It is said that the quality of the plait is largely affected by the weather and the feeling of the people, so that a superior quality is made in the summer, when the plaiters can remain outdoors in the sunshine. In the winter, when the extreme cold of Shantung confines the people to their houses, the braid is liable to be affected by the smoke of the lamps, charcoal fires with their flames, etc. The fact that all straws must be wet during the plaiting also affects the manufacture, as during the winter months, which are dry and cold, it is more difficult to handle the straws.

The plaiters have no other occupation than this, and find sufficient work for the entire year, although during the four or five weeks when the straw crop must be gathered they stop plaiting and assist in the fields.

The quantity of braid that a plaiter can make is dependent entirely upon the quality of the product. Split plait takes, according to width, from two to six days to make a piece of 60 yards. Split plait 10 to 11 millimetres (0.394 to 0.4334 inch) in width will average about two days' work for the average plaiter for a 60 yard piece, while the finer braid, measuring from 5 to 6 millimetres (0.197 to 0.0236 inch), would probably take five or six days. This is partially due to the fact that a plaiter cannot work so long on the finer grades of work, and in some cases will not do more than one or two hours' work a day on special quality goods, but will continue working on some inferior quality as a rest.

The pay of plaiters is very small, and would probably not average one cent in gold per day per man. It is almost impossible to get any definite idea of the income of a plaiter, as it depends largely on the skill of the operator, the number of people engaged in the work who are members of his family, the cost of straws, etc. The plaiters buy their straw from the dealers, and sell the manufactured braid to straw braid brokers, who pass through the villages at more or less regular intervals, and either purchase what braid is available or make contracts with the plaiters for supplying a certain quantity of the quality of braid required.

Braid is sold entirely by the Chinese "chih" or foot (14.1 American inches) by the plaiters to the brokers.

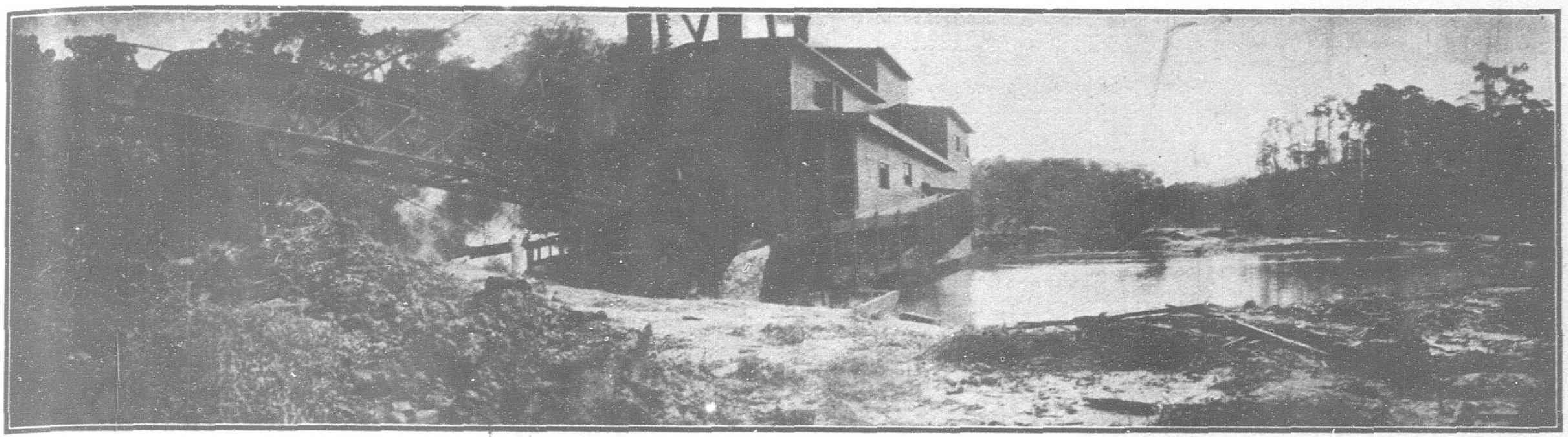
The Chinese dealers in the interior, who are located in the larger cities of the districts where the braid is manufactured, purchase from the plaiters and prepare the goods for sale to the foreign buyers. These dealers send their brokers throughout the district, either making contracts for the manufacture of the kinds of braid they require or buying what is available on the market, that is, what they are able to pick up already finished by the plaiters. This purchased braid is bought in its various odd lengths, varying from a few feet to many yards, and sorted into its various qualities. Where places are found which are off in color, or not up to the standard quality, they are cut from the piece, and the braid is thus sorted into the different qualities which have become known to commerce. A bundler then goes through the piles and connects the pieces together until he has a total length of 30, 60 or 120 yards, according to the kind of braid which he is working upon, and when the required length is completed rolls the braid into the skeins in which it appears on the market. The bundles are then packed into bales or cases, according to the variety, and are ready for shipment.

Braids vary in width from 3 millimeters (0.118 inch), which is probably the finest braid that can be made, to 30 millimeters (1.181 inches) or over. It is packed in bales covered with straw matting, and a bale contains 240 pieces, and costs approximately 25 cents gold per bale for packing. Split braid, or the more expensive kinds, is packed in cases containing 480 pieces, and costs for packing about 90 cents gold.

During the time that the braid is in the hands of the up-country dealers it goes through its bleaching process. It is hung in small, tightly closed rooms for a day or more, exposed to the fumes of burning sulphur in specially prepared tin boxes in cases.

The complete art of bleaching has never been discovered by the Chinese, and large quantities of the straw braid exported from China are sent to England, where they are rebleached. The great centre of the English straw braid business is in Luton, a small town in Bedfordshire 40 miles from London. Previous to the opening of the port of Tsingtau by the Germans, almost all the straw braid used on the Continent was shipped to London, sometimes rebleached at Luton, and reshipped to the Continent, but at the present time most of the braid intended for the Continent is shipped directly from Tsingtau.

Braid is occasionally shipped from China direct to the United States, and then sent to Luton for bleaching purposes, to be returned to the United States, but the more usual method is for American buyers to ship such braid as needs rebleaching direct to London, where it is forwarded to Luton, and after bleaching it is shipped to the United States from London or Liverpool, appearing in the American customs statistics as of British origin. There is practically no plaiting of braid in England at present, though formerly much braid was made in and about Luton.



GOLD DREDGING AT GUMAOS IN PARACALE DISTRICT

MINING PROGRESS IN PHILIPPINES

Philippine Islands Form Mining Association

The operators of fourteen of the leading gold-mining properties in the Philippines have recently organized themselves into an association to be known as the Philippine Mining Association. The purposes of this organization are to bring accurate information concerning Philippine mining before the public both locally and abroad. To this end the society will publish a bulletin for free distribution, to be issued from time to time, and will attempt to furnish authoritative information concerning Philippine mines and mining conditions. It is hoped that one result of this publicity will be an increased interest in local mining on the part of American investors. It has not been possible up to the present to interest any large American capital in Philippine mining ventures. The various concerns now operating were financed either locally, on the China coast, or in Australia and New Zealand. Judge Frank B. Ingersoll, general manager of the Gumaos Placer Co., managing director of the Malaguit Dredging Co., and an official in several other organizations, is president of the Association.

Another line of endeavor on the part of the organization will be an attempt to counteract the tendency toward increased taxation of mines, which was manifested in the last legislature, by educating the public to an accurate knowledge of Philippine mines and mining, so that they may be in a position better to judge as to the fairness of increased taxation. A tax of 1½ per cent. was imposed on the gross output of gold mines after the first of last January. The original law provided for a tax of 5 per cent. of the gross output of precious and semi-precious metals, but after a series of public hearings by the committee to which the bill was referred, the tax was diminished to 1½ per cent. and imposed on the output of gold mines only. Since the bullion from most of the mines carries a small proportion of silver, the tax applies to silver as well as gold in practice. Mining men generally opposed the taxation on the ground that the industry was too young to survive without serious injury. As it works out in the case of one of the larger companies, the increased taxes amount to about 2½ per cent. of the total capitalization.

In spite of adverse legislation, however, the last few months have seen much advance in the progress of gold mining. The Philippine production of gold for the year 1914, according to the figures prepared by the Division of Mines, Bureau of Science, was P2,349,267, an increase of nearly 36 per cent. over the production for 1913. The figures given out by the Director of the United States Mint for the gold production of the Philippines in 1914 are P2,120,000, a sum that probably does not include bullion in transit nor bullion sold in Europe and Japan.

More than 50 per cent. of the Philippine production came from lode mining at Aroroy, Masbate, where four mills with a combined capacity of about 300 tons daily are in operation. The seven dredges in the Paracale-Mambulao placer region yielded more than P1,000,000 in 1914. The larger part of the remainder of the output came from the Mountain province, where one 10-stamp mill, two 3-stamp mills, and one 5-ft. Huntington mill were operating during a part of the year. Filipinos, working on the Palidan slide near Mancayan, recovered more than P40,000 worth of gold by panning during the past year.

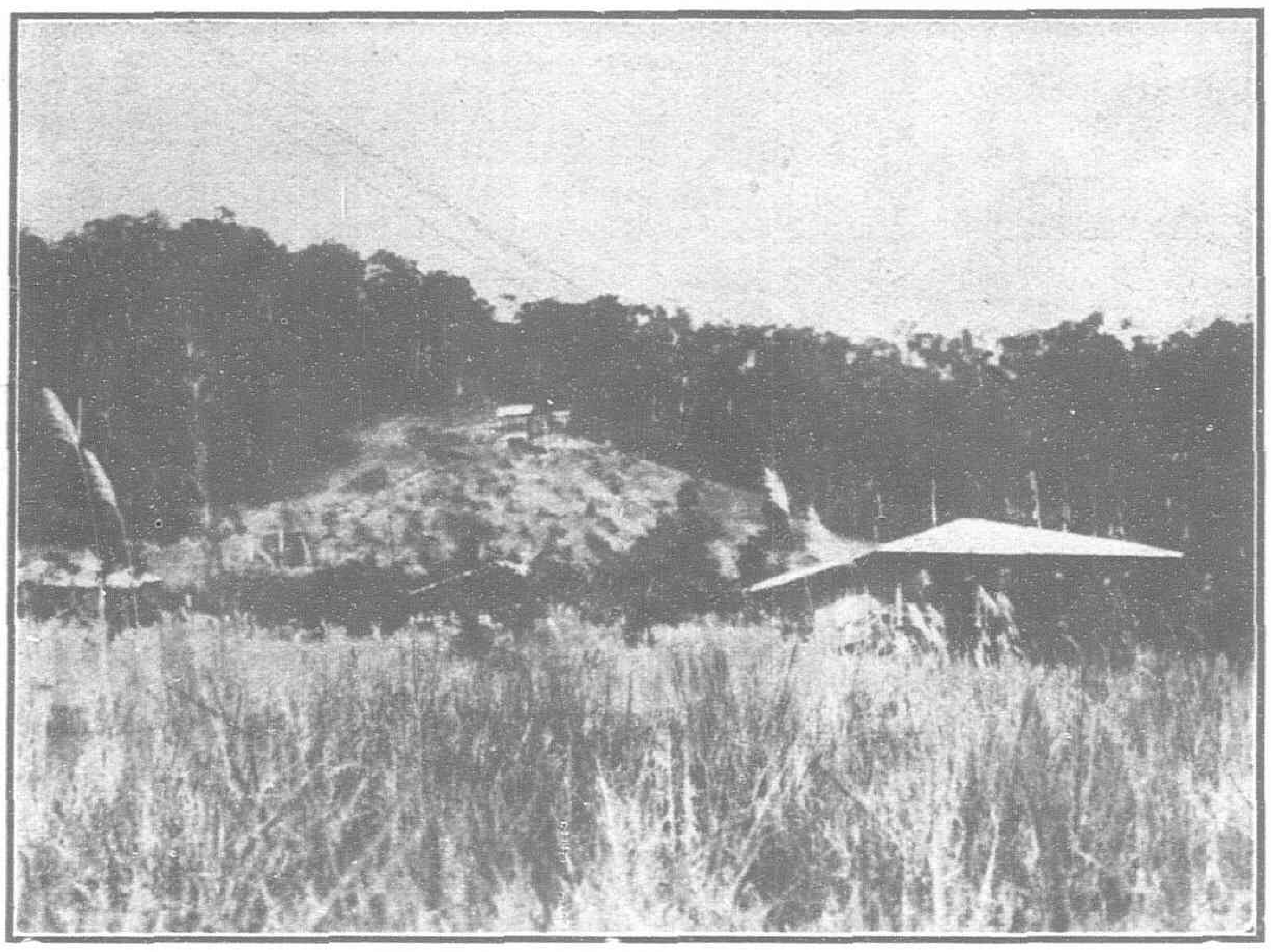
NEW MILL OF SYNDICATE MINING CO., MASBATE

The Benguet region in Mountain province will undoubtedly become an important contributor. The 10-stamp mill on the Headwaters property is being profitably operated under lease. The Acupan Mining Co. is assembling a 3-stamp mill on a claim, which is known to be good, on Batuan Creek, and the new 10-stamp mill of the Benguet Consolidated Mining Co. is rapidly nearing completion. Twice previously floods have carried away the mill on the Benguet Consolidated property, so that the new mill is the third to have been erected there. C. M. Eye, general manager for the Benguet Consolidated Co., who has had entire charge of the design and erection of the new plant has supplied the following notes on the present condition of the property:

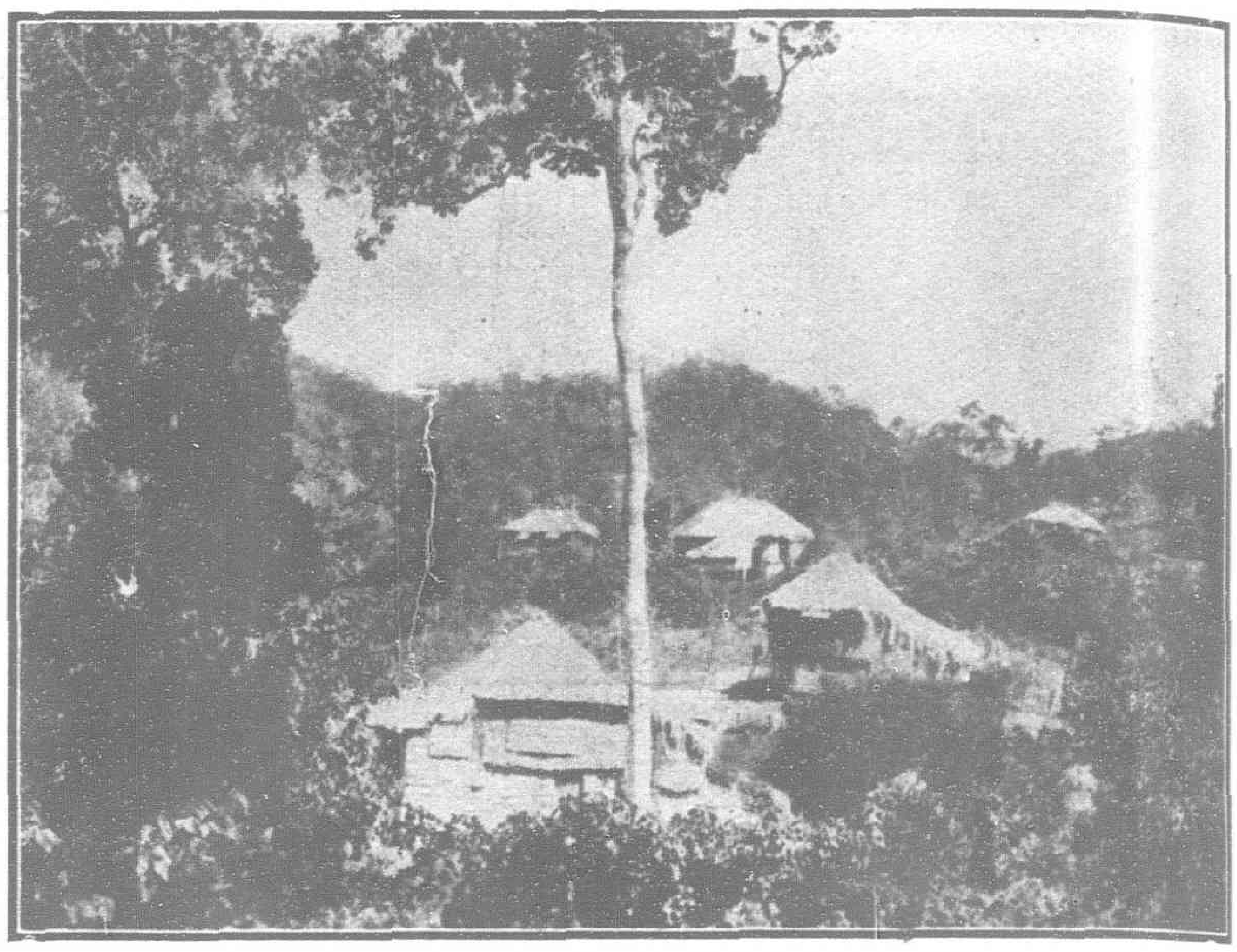
The new mill will be of the all-sliming, cyaniding type, and its equipment will include: one 8 by 12 Hercules Blake crusher: ten Hendy stamps of 1050 lb. with high narrow-discharge mortars set on wooden blocks; one Dorr duplex classifier in closed circuit and on the same level with a Denver Engineering Works, 6 by 10 ft. tube-mill; elevator from classifier to a primary Dorr thickener in a 25 by 12-ft. vat; three Dorr agitators in series in 14 by 12 ft. vats for continuous work; four secondary thickeners in series in 25 by 12 ft. vats, arranged to work on the continuous discharge counter-current system; one clarifying vat with canvas leaf-filters and wet-vacuum pump; three double-line, 7 compartment zinc-boxes, made by the Atlantic, Gulf and Pacific Co., Manila; two Gould triplex pumps for solution transfer, each with a capacity of 75 gal. per min.; a battery of Gould diaphragm pumps between thickeners for pulp transfer; an automatic tailing-sampler following the line of vats; and a complete clean-up equipment including a Case oil-fired tilting furnace. The solution-flow is recorded automatically in tons per 24 hours by means of a recording-gauge on a small vat, from which the solution escapes through a calibrated standard orifice. All tankage is of corrugated steel, the choice of material being governed partly by the saving made possible in freight charges, which are excessive in this region.

Power will be distributed by General Electric motors; the stamps are on a 25-hp. back-geared motor and the tube-mill is operated through a friction-clutch by an ordinary 50 hp. motor. The total motor horse-power is 105, while the maximum load with the crusher in operation is estimated at 100 hp. Hydro-electric power is to be generated by a Pelton-Doble wheel direct connected to a 120-kw. generator, situated down-stream from the mill. The pipe-line is 6000 ft. long and yields a head of 300 ft. gross, 260 ft. net, with a flow of 5 second-feet. The diversion-dam is made of logs on a concrete footing and is 18 ft. high by 45 ft. long. Electric current will be transmitted at 2380 volts over a transmission line 2400 ft. long to the mill, where the voltage will be stepped down to 220.

A new adit is being driven from the lowest practicable elevation to drain the old workings. This adit will be about 500 ft. long when



HEAD BIN AND SITE OF SYNDICATE MINES

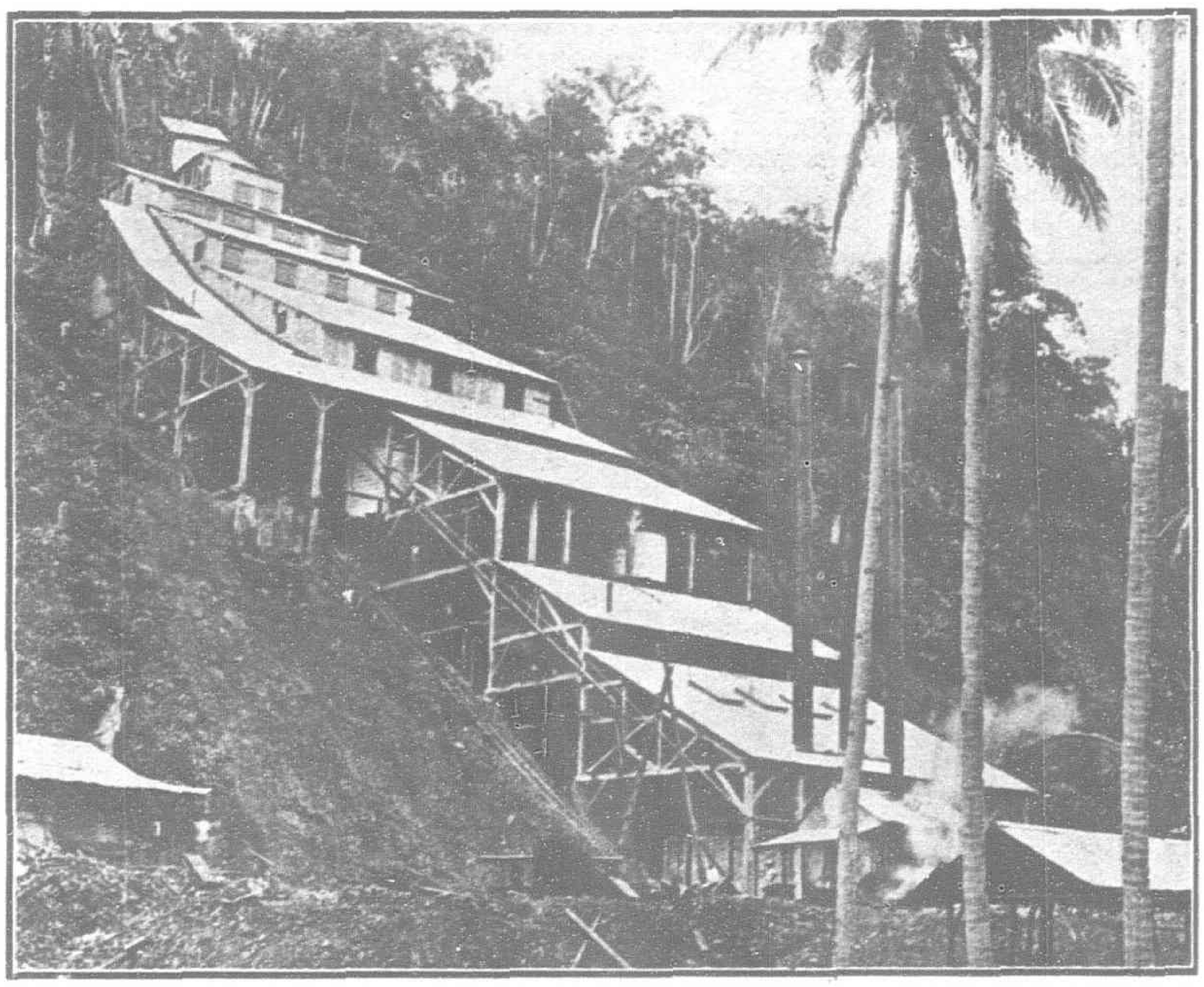


QUARTERS OF MINERS ON SYNDICATE CLAIMS

it reaches the vein. A new adit will also be driven from the present mill-site to the upper levels of the mine to serve for a haulage-way. An old cross-cut is being extended on the line of this adit and during the advance the cross-cut recently passed through 4½ ft. of ore assaying 180 pesos per metric ton. Concentrate from this ore assayed more than 4000 pesos per ton. The vein in the old mine is being developed to the eastward by a drift along the hanging wall with cross-cuts to the foot-wall at 50-ft. intervals; the first of these cross-cuts revealed 6½ ft. of ore assaying 160 pesos per ton, while the second cross-cut, just completed, encountered 9½ ft. of ore assaying 70 pesos. On the level of the old drainage-adit, which is about 80 ft. below the new mill-adit, there is more than 1000 ft. of old workings which were driven through good ore. This part of the mine is now flooded but will be unwatered by the new adit.

The Cansuran Placer Co., which recently began hydraulicking operations on Cansuran Creek about 12 kilometres south of Surigao, the capital of Surigao Province in Mindanao, will also be a producer of gold this year. The company is hydraulicking several adjacent areas of coarse gravel aggregating 325 acres. The ground was taken up on the recommendation of R. Y. Hanlon, who tested the gravel by digging a series of 181 holes and obtained an average of 44 centavos per cubic yard over the territory to be worked. The average depth to bedrock is 4 yards. The gravel is coarse but the individual boulders are embedded in clay. Water is obtained from the head of Tuganan River and conveyed to the claims through ditch, flume, and pipe-line with a total length of over a mile. The head varies from 100 to 300 ft. over different parts of the ground to be worked. Two 6-in. monitors and one 7-in. monitor are in place and an area of about 5 acres will have been cleaned-up within a short time. The work has been hampered by a shortage of water during the present general drouth.

The Australian dredges, at Paracale, which now number four, have had a normal run during the past year and yielded the usual dividends. The Malaguit dredge has lost some time because of the necessity of replacing some of the machinery, but has made a generally satisfactory record. The Cumaos dredge has finished its second year of operation with a total production of ₱912,205 (two years and three months time). The sum of P 535,000, or 107 per cent. of the capitalization, has been distributed in dividends during this period. The average value of the Gumaos ground for monthly dredge-runs has varied from 5 centavos to P1.28 per yard. At places the dredge has dug to a depth of 52 ft., while elsewhere bedrock was encountered at 20 ft. or even less. These data afford an idea of the irregularity of the dredging ground in this district. The average value per cubic yard for the period of operation has been 49 centavos. The average depth to bedrock has been about 35 ft. and the average cost of dredging, about 18 centavos per yard.



MILL OF COLORADO MINING COMPANY

According to Press Bulletin 40 of the Bureau of Science, Manila, the division of mines has received a number of inquiries concerning the discovery of gold near Iligan, Mindanao, which was reported in the local press several months ago. The discoverer of the new field is Allen Smith, Jr., of the Philippine Scouts. He has released to the public certain information supplied by him to the Bureau of Science. The claims located are 12 miles east-northeast of Iligan. The deposit is a conglomerate. Twenty assays have been made on the material, 17 of which return from P6 to P30 per ton. If the samples were properly taken, these results are interesting. There is plenty of conglomerate in the Islands, but it is not generally of any commercial value. An engineer made an examination of the area some months later.

THE LUBANG GOLD DISTRICT IN SOUTHERN BENGUET

[BY V. E. LEDNICKY, PHILIPPINE BUREAU OF SCIENCE]

The steady production of a small amount of gold during the past few months has attracted attention to the Lubang district in Benguet Province. This district is distinct from the Baguio region and gives enough promise of becoming a producer of gold to merit description.

Gold was first found in the Lubang district by the Igorotes, who panned along the creeks and also worked on one or two small veins. Probably this work had begun at a very early date. Their workings and small stone mills used to grind the ores can still be seen.

The first Americans to go into the district were ex-soldiers with mining experience, and some of the original locators are still there. They have kept up their prospecting and development work until they are well acquainted with the more prominent veins of the country.

The following notes were made during a visit of a few days to the workings on the located claims.

The Lubang district is situated on Lubang River, in the southern end of Benguet Province, about 40 kilometers from the nearest railroad. Lubang River is a branch of the Tubuoy, which flows into Ango River about 50 kilometers from its mouth. Tubuoy River, with its several branches, drains all of the goldbearing region of southern Benguet. About 5 kilometers above Binalonan, Pangasinan Province, it flows out of the mountainous country through a steep-walled cañon on to a flat, sandy plain, across which it meanders for a distance of about 20 kilometers to its mouth. The floor of the cañon is covered with coarse gravel, into which the small, swift-flowing stream sinks at intervals, leaving stretches of dry river bed. During the dry season the volume of water is small, but the appearance of the cañon floor indicates an abundance of water during the rainy season. The lower part of the cañon has very steep walls, varying in height from 15 to 30 meters. As you go upstream the walls gradually diminish in height until Lubang River is reached. This river also has very steep walls.

The mines of the Lubang district may be reached from Magaldan, the end of the railroad, by means of automobile to Binalonan and on horseback from there to Lubang. Owing to the numerous trails it is advisable to take a guide from Binalonan, who can also act as a carrier.

The trail across the plain from Binalonan and up Lubang River cañon is passable for carabao carts, and the trip can be made without difficulty. The carts haul about 200 kilograms at a load and receive 5 pesos[*] per load from Binalonan. During the dry season regular trips are made, but in the wet season the trips are necessarily dependent upon the weather. The freight rate from Magaldan to Binalonan is 0.5 centavo per kilogram.

The country around the mines is almost bare of timber suitable for mining purposes. The local supply of firewood is insufficient for boiler fuel. Short timbers for stoping can be obtained at about 50 centavos each, but they do not serve for drift sets or lumber. A species of pine tree grows on the bars and low banks of Tubuoy River, attaining a maximum diameter of 35 centimeters; they are tall enough for three upright drift timbers. This class of wood has never been tried in the mines at Lubang, but the Bureau of Forestry recommends it as a very durable material.

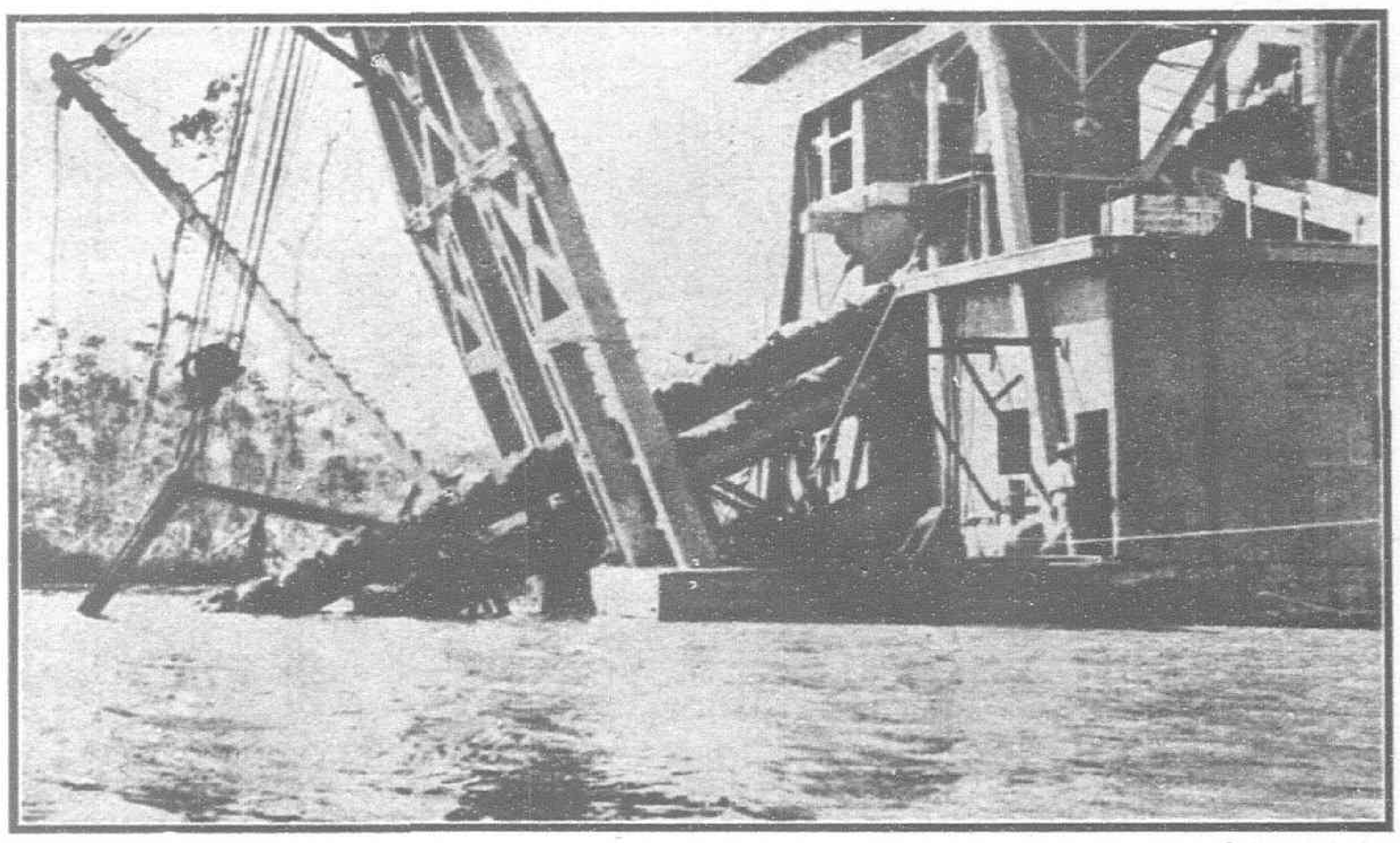
A considerable growth of bamboo around the Mentzer camp would furnish building material for laborers' houses, and there is an abundance of grass to cover the roofs. Grass for forage is plentiful during the rainy season, and would be an asset in case more animals were used in hauling supplies.

The rainy season begins in May and lasts through October; during these months it is rather difficult to use the cañon road, and it is sometimes necessary to follow the mountain trail on the top of the ridges. During the rainy season there is an abundance of water for mining purposes. A fall of 100 meters could be utilized for the development of water power without an excessive expenditure. At present a supply of water sufficient for a 10-stamp battery is available.

In outline, the geology of the district is as follows: Two distinct formations are present, the Tertiary sedimentaries and the older extrusives and plutonic rocks. The district may be said to be on the southern edge of the extrusive in Benguet Province, described by Eveland[†] and Smith.[‡] The formation downstream from the Mentzer camp is mostly conglomerate of considerable thickness, capped in places with a comparatively thin layer of limestone. The conglomerate contains igneous and sedimentary rocks varying from pebbles the size of peas to bowlders 1 meter or more in diameter. The overlying limestone is very hard and pure enough to burn for lime, although it contains some quartz and is somewhat colored by iron stains. The igneous rocks, which probably represent the basal formation in the district, are predominantly holocrystalline, but andesites and porphyries are found in various places.

The economic geology of the district cannot be well determined with the development work that has been done, since none of the work extends beyond the oxidized zone. In general, the country rock of the district is diorite, but small intrusive dikes of andesite and porphyry are common. The diorite has suffered considerable disturbance, and the veins are fillings of fissures produced by movement. The fissures occur along nearly parallel lines with a general east-west direction. The irregular, shattered zones between the fissure planes have been altered, and broken quartz fills the cracks and seams. The values in the fissures are not uniform, but appear to be confined to irregular quartz stringers throughout the vein material of broken quartz and clay. Rich pockets of visible gold are found, but they are not very large. Several wide veins of quartz can be traced along the ridges, and some of them show good values on assay. It is possible that more uniform values could be obtained from them than from the softer veins that have been developed. All of the development work indicates that sulphides are to be expected with depth. Free-milling ores are not to be depended upon, therefore, for large operation.

One or two small companies have attempted to exploit the district, but lack of sufficient capital has kept them putting the mines on a paying basis. Two small mills are operating. One is under the charge of George Mentzer, and the other is under J. H. McMichael.



DIGGING LADDER OF MALAGUIT DREDGE

The claims of the Lubang district may be divided into three groups: the lower, the central, and the upper. The majority of these are included in the lower group under the supervision of Mr. Mentzer. He has developed several veins on the property and has completed about 185 meters of tunnel. Most of the veins have a strike of about north 80° east, dip 55° south, and can be traced to the ridges on the opposite side of Tubuoy River. They vary in width from 60 centimeters to 2 meters and have a very great range in value. No work is done in ground that does not pan free gold, but the pannings are not always an indicator of the actual assay value. One vein, 60 centimeters wide, known as the sulphide vein, pans some free gold but assays a great deal more. It has been opened on two levels, 30 meters apart, and shows no sign of pinching out. At present most of the ore for the mill is being stoped on the Independence claim. This ore is low grade, but shows richer sulphide values with depth.

The central group of claims belongs to Mr. Horn. He has done development work on all the claims and has some exceptional values. A bull-quartz vein 2 meters wide, which outcrops along a ridge for a hundred meters or more, is perhaps the best prospect on these claims. The values are not high on the surface, but tunnels into the ridge have struck rich ore beneath the surface.

On the upper group of claims Mr. McMichael has erected a small mill and has driven a total length of about 500 meters of tunnel on a half dozen veins. Some rich ore has been encountered, but the oxidized zone is shallow and the work has not been carried into the sulphides. Some coarse, visible gold is obtained, but most of the free gold is very fine. At present Mr. McMichael is working in a new place where values seem to be very generally distributed. The ground is very much broken, and as yet no definite vein has been found, but good leads are being followed. In one of the tunnels a sample of red clay taken by the Bureau of Science showed over 1 per cent of mercury. This is probably the source of the cinnabar that can be panned along Tubuoy River. One vein recently opened by Mr. McMichael is very rich in galena and sphalerite. It contains some silver, but not enough to make it valuable.

The Mentzer mill, situated at the lower end of the district, is a 3-stamp prospecting mill made by the Mine & Smelters' Supply Company of Denver, Colorado. The stamp product is amalgamated, but concentration over a Challenge table has been attempted. The ore is sorted at the mine, and only the small material is sent to the mill. Sledges drawn by bulls are used for transporting the ore. A small tramway or chute would undoubtedly be cheaper, as the sledge is very slow and rather expensive. The ore from the sledges is dumped above the mill and shoveled down to the stamps. It is fed into the battery by hand from a trough at a level with the top of the mortar. The three 250-pound stamps are not heavy enough to crush hard rock, and only pieces of quartz 2 centimeters in diameter or less can be taken. When crushing soft ore, an output of 1.5 tons per stamp per twelve hours is obtained through a 30-mesh screen. Mercury is fed into the mortar, and a large percentage of the recoverable value is obtained by inside amalgamation. The discharge passes over a 2- by 8-foot amalgamation table with two silvered copper plates. A triple mercury trap at the end of the table catches most of the excess mercury and gold that escapes the table. About 80 per cent of the free gold in the screen product is amalgamated on the first 60 centimeters of the upper plate, and the other 20 per cent is caught below or is lost with the slimes. No amalgamation tests have been made to ascertain the exact recovery, but probably the loss of free gold is small.

The power is furnished by a 3-horsepower Hornsby oil engine, which uses about 19 liters of kerosene every twelve hours. The engine has given excellent service for over one year and in that time has not needed repairing. The mill is run only twelve hours per day and requires a crew of one American and two Filipinos. An attempt will be made to run it the full twenty-four hours in the future.

An attempt to concentrate the tailings on a Challenge table was tried for some time, but the concentrates never proved rich enough to pay for smelting. Mr. Mentzer tried mixing the concentrates with clay and making balls, which he roasted on a wood fire. The method was successful as far as oxidizing the sulphides was concerned, but he had difficulty in milling the roasted product. The clay blinded the screens, and the ashes from the fire fouled the plates so that they were very hard to dress for several days afterwards. Owing to this difficulty and also to the extra work entailed, the concentrator was abandoned; the tailings go directly through the launder to the creek. It is suggested that it might be profitable to bank the tailings and keep them for future cyaniding.

The mill on the upper group of claims is not working at present, but will be run continuously as soon as the rainy season starts. It consists of a 3.5-foot Huntington mill of the improved type, bolted securely to a foundation of heavy timbers. It is equipped with 60-mesh punched slot screens, and the crushed product passes over silvered copper plates and through a launder on to a 3-by 8-foot bumping table made after the Gilpin County Colorado table. This table was built in Manila and seems to give good results, but as yet nothing has been done with the concentrates. Amalgamation inside the Huntington mill catches almost all the free gold.

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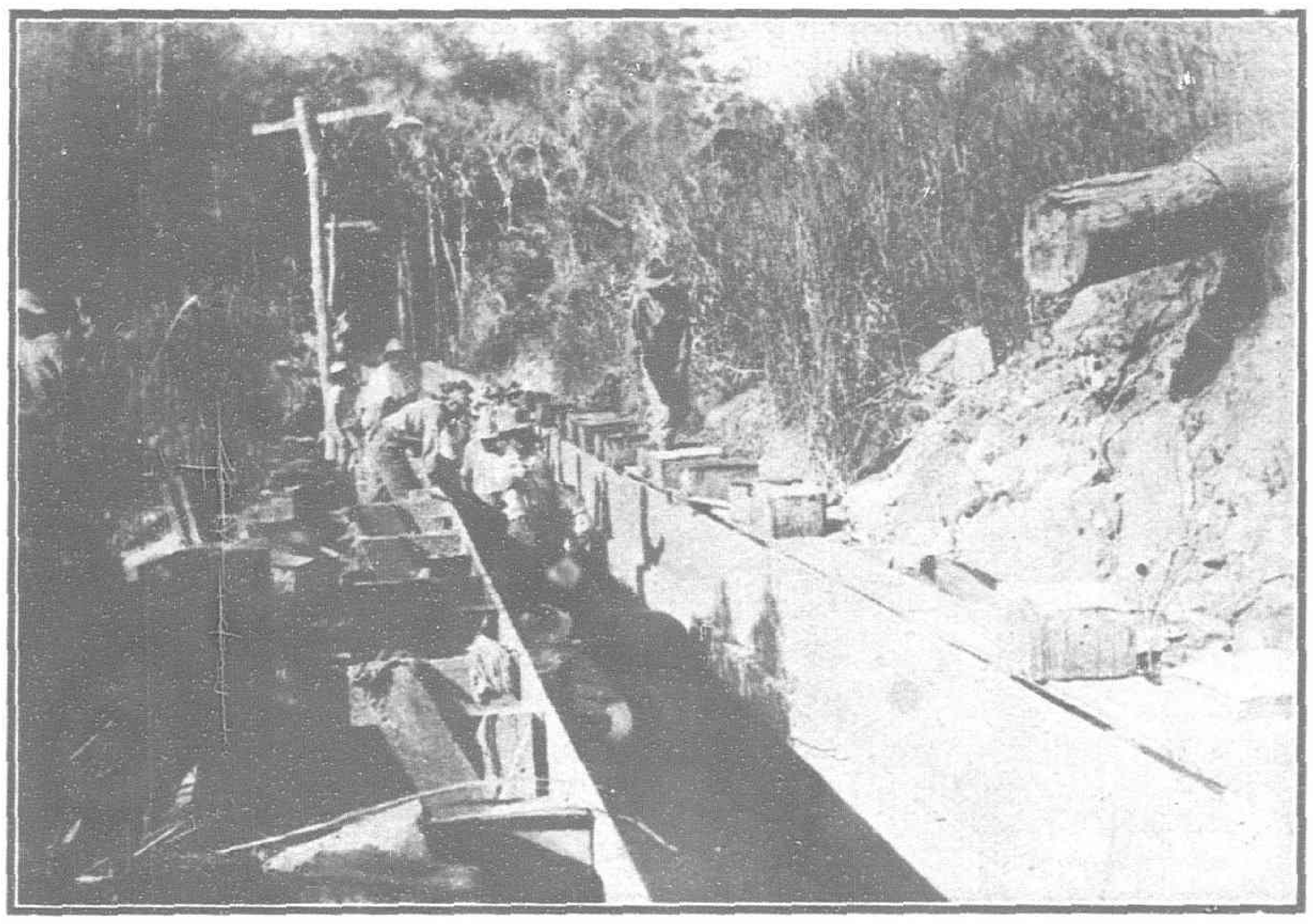
[*] One peso Philippine currency equals 100 centavos, equals 50 cents United States currency.

[†] *Phil. Journ. Sci., Sec. A* (1907). 4, 207.

[‡] *Ibid.* (1911), 6, 429.

This mill is run at 90 revolutions per minute and gives an output of 4 to 5 tons per twenty-four hours through a 60 mesh screen if fed with an ore not coarser than 2.5 centimeters maximum diameter. A 12-horse-power Olds oil engine has been used for power, but milling was discontinued because of the excessive fuel cost. The kerosene consumption was 28 liters in twelve hours, and the estimated cost was about 17 centavos per liter. It was decided to store ore during the dry season and to run the mill only during the rainy season when water power could be obtained.



Cleaning up Sluice Boxes of Cansuran Placer, First Hydraulic Workings in Philippines

A 5-meter overshot water wheel was built this year and was operated about thirty days before the rains stopped. It is built entirely of wood and seems to give excellent results. The power is transmitted by a belt from a 2-meter fixed pulley directly to the Huntington mill. The installation of a small primary crusher for which water power is available would undoubtedly prove economical.

The Lubang district will probably some day be a fair producer of gold. The values are there, but more development work, which will entail the expenditure of several thousand pesos, must be done before a mill could be built.

MINERAL RESOURCES OF SURIGAO PROVINCE

[By Wallace E. Pratt of the Philippine Bureau of Science]

Surigao Province has been a producer of gold for many years, but promises now to become more important in this respect through the operations of the recently organized Cansuran Placer Company. Attention has recently also been directed to Surigao's mineral resources by reason of the discovery by Mr. H. F. Cameron, engineer for the Department of Mindanao and Sulu, that a large area along the eastern coast of the province is covered with iron ore.

Gold mining in Surigao began in very remote times. The metal, detected first in sands of the rivers and beaches, was traced almost at once to its original home in small quartz stringers and pockets in the andesite, which constitutes a large part of the land mass of the region. Although small, these quartz bodies appear to have been rich in gold at the surface, and at many places the ore has been taken out from open trenches and shallow holes over considerable distances.

One of the best known of the early prospectors in the Surigao gold region was a Frenchman referred to by the Filipinos as Don Maximillano. Apparently this man explored most of the known gold localities in Surigao early in the last century. He is said to have died at Surigao sixty-two years ago. It is stated that he worked first with the placer gold in the vicinity of the present holdings of the Cansuran Placer Company about 11 kilometers south of the town of Surigao. Later he prospected the gold-bearing quartz at Tinabingan, Placer, but ultimately he moved to the eastern margin of Lake Mainit, where he made his home and did most of his mining.

There is to-day little evidence of mining on the site of Don Maximillano's property at Mainit. Bricks are found in one locality at the edge of the foothills surrounding the lake, which the older residents believe to have been part of a furnace used by the Frenchman. Depressions which probably mark former shallow pits are found in the same neighborhood. A little gold is obtained by panning in an adjacent gully, and assays of a few pieces of ore encountered near one of the gold pits show fairly high gold values. There is no showing of ore in place, however, and it appears improbable that much mining was done here. The Frenchman is believed by the local people to have been rich, but he might easily have made enough from agriculture in this fertile region and from the sawmill, which he operated in clearing his land, to impress his simple neighbors.

A former mine which is famous in Surigao Province was located on a small island named Campiña, east of the Island of Masapelid in the jurisdiction of Placer. Gold was discovered on Campiña, the area of which is less than 1 hectare, about the year 1883, and mining was carried on assiduously for a period of two years, according to the presidente of the town of Placer. Mr. Maurice Goodman, a mining engineer, formerly in the Bureau of Science, visited Campiña and found rather extensive old workings, but although he took numerous samples, his assays showed only very low values in gold.* It is probable that the miners followed the usual rich stringers in andesite and exhausted the small deposit. It is estimated by some of the old miners that Campiña yielded 30,000 pesos† in gold.

C. A. Briggs, an American prospector who spent years in the Alaskan gold fields, is at present in control of the old mines at Tinabingan, Placer. Mr. Briggs has explored the lines of open trench and pits which mark a low ridge just back from the coast and has driven tunnels on several of the leads. He states that he has obtained high assays from various samples, but that samples over extended faces show less gold. Mr. Briggs is now devoting all his attention to exploring a new lead which reveals a width of about 2 meters of closely intersecting quartz stringers in silicified andesite and andesite breccia. A sample which he believes to be representative of the full width of this lead showed upon assay a value of 25 pesos per metric ton in gold. Although the mineralization at Tinabingan consists only of stringers and pockets, it is somewhat regular in that the strike of the leads at three different openings over the claims is constantly east-northeast.

William Ashburner, an American mining engineer who was prominent in his profession at the end of the last century, visited Surigao in 1883 and inspected much of the mining that was then in progress. He reported the presence of gold on Cansuran Creek near the town of Surigao in pockety stringers of quartz and calcite cutting slate. He also found angular gold in the placers at the mouth of Bigaa Creek, below Cansuran, which he believed to have come from the decomposition of the prevailing country rock, and at Tinabingan, Placer, he noted fragments of gold-bearing quartz but saw no veins.

According to the Spanish engineer Centeno, the most important gold district in Surigao is in the mountains of Canimon, Binutong, and Caumahat, which lie "a day's journey" (in reality about 11 kilometers) south of the town of Surigao. Around the base of these three mountains or, more properly, hills, lies the gravel which is now being hydraulicked by the Cansuran Placer Company, and on the hills themselves lode claims are being prospected by the Surigao Mining Company. Centeno found veins in a talcose, serpentinoid slate, varying up to 10 centimeters in width. Some of the veins were quartzose, others were made up of calcite; in the calcite veins he noted chalcopyrite, galena, and zinc blends.

American prospectors were quickly attracted to this region following American occupation, and Messrs. C. A. Briggs, E. O. Parker, and R. W. McCullough obtained possession through mineral location and through the purchase of a Spanish grant to the placer property on Cansuran Creek and to the lode deposits on the hills examined by Centeno. The placer ground has been leased to the Cansuran Placer Company. The lode properties are controlled by the locators as the Surigao Mining Company.

In the openings which the Surigao Mining Company has made recently on Canimon and the adjacent hills ore has been encountered in andesite, in indurated shale and sandstone, and in a laminated, serpentinous rock which doubtless is the slate noted by Centeno. The gangue is quartz in the andesite and is usually dark-colored. In the shale and sandstone quartz and calcite both occur, and as recorded by the earlier observers form intersecting stringers through the rock. Visible gold can be detected in weathered portions of some of the ore, and angular, fairly coarse gold can be panned from the surface. The quartz in the andesite carries antimony in places, probably as the mineral jamesonite. All the fresh ore is pyritiferous. No veins of any size have been defined by the work so far, but large blocks of quartz and silicified andesite are encountered on the hillsides and in the streams. Some fairly high assay results have been obtained on samples taken by the men in charge of the work. There is a tendency toward a northeast or east-northeast alignment in the strike of the mineralization and in the structure of the bedded rocks, although in neither case is the strike constant.

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* *Min. Res. P. I. for 1908* (1909), 40.

† One peso Philippine currency equals 50 cents United States currency.

Limestone is found associated with the indurated shale and sandstone, but in undeterminable relation. Away from the vicinity of the andesite the sedimentary rocks, especially the shales, are less disturbed and appear to form an extensive series. In addition to the rocks already noted there is a serpentine-schist at the base of the hills which forms the bedrock over a part of the placer area. Still another rock, not found in place, but scattered along the streams in large blocks, is a red, quartz-veined slate or indurated shale, parts of which assume the character of jasper.

The relations of the various rocks to each other are not clear. Probably the schist is the basal rock of the region, the sedimentaries having been deposited upon it and both rocks intruded later by the andesite. The formation of veins and the metamorphism and dislocation of the sedimentaries are probably due to the dynamism and mineralization accompanying or following the intrusion of the andesite.

The general character of the mineralization, the variety of rocks encountered, and the apparently nonuniform distribution of the gold values in this region are suggestive of conditions at the Tumbaga Mine, Mambulao, Camarines, where rich pockets of gold are found in calcite and quartz veinlets cutting andesite and indurated shale.

The gold-bearing gravel now being exploited by the Cansuran Mining Company in the vicinity of these vein-deposits in Surigao has proved since hydraulicking began to contain exceedingly large bowlders. It is not confined in its distribution to the present river beds, but covers the intervening ridges and slopes as well. It is rarely more than 5 meters in thickness, and in places the underlying bedrock is exposed at the surface. The large bowlders are partly rounded with occasional angles, while the small stones are worn smooth. A striking feature of the placer area is the extent of the old workings which are to be inferred from the remains of ditches, shafts, and rock sluices encountered everywhere.

Most of the gold is rounded fairly coarse, varying from the size of rice grains up to rare nuggets of 30 grams' weight. A small proportion of sharp, angular gold, somewhat darker in color than the rounded gold and usually in smaller particles, is also obtained. Some specimens of both classes of gold inclose quartz. The gold in the nuggets is spongy or porous, and the larger nuggets may be broken readily. Melted into bullion the gold retains its brittle character, and the bars crumble or break if they are roughly handled. The average bullion has a fineness of about 770 gold.

Different observers have speculated as to the probable source of the gold in the Cansuran placers. It has been suggested that the rounded gold nuggets are from a distant source and have been carried to their present position by flowing water while the sharp, angular gold came from the veins in the hills adjacent to Cansuran Creek. The fact that the gravel is distributed over valley and ridge alike has been cited as evidence of the former existence of a great river, the bed of which was at a level corresponding to the present ridges and was flanked on either side by a strip of gravel wash about 1 kilometer wide. The rounded gold presumably was brought from a distance and deposited with the gravel. It is further supposed that subsequent differential elevation of the land mass, perhaps coincident with the intrusion of the andesites, interfered with the flow of the former river and left the gravels to be worked over by the modern drainage system.

It is apparent from the distribution of the gravel and the size of the bowlders that the assumed former river must have been of great volume and consequently probably of great length. The land mass of Mindanao is generally believed to have been smaller formerly than it is at present, and it is difficult satisfactorily to place the course of such an ancient river. Moreover the character of the gravel—large bowlders in a clay matrix—is not that of old river bars. According to the tests, also, neither the gold nor the gravel is regularly distributed over a large continuous area such as the flood plains of a large river would form, but is confined to detached sections in a general alluvial region. There are no conspicuous evidences of a typical terrace structure in the gravels, but the wash follows closely the present topography, covering the lower ridges, the slopes, and the valley floors alike.

Consequently the correctness of the theory as outlined is questionable. From its character and distribution the gravel can be more satisfactorily accounted for as talus and piedmont deposits from the adjacent mountains, which, as has been shown, are gold-bearing. The rounding of some of the gold and of the gravel might have been accomplished by the abrasion incident to slides and other processes of degradation on the local mountain slopes. The stringers and small veins in these mountains are rich in free gold and might well have yielded nuggets of considerable size. The sharp, fine gold found in the placers may come from the numerous veins in the schist which forms the bedrock over the placer area itself. The fact that there is antimony in the gold-bearing quartz of the mountains and that alloyed antimony might be responsible for the brittle character of the nuggets in the placer is likewise suggestive that the nuggets came from adjacent lodes.

The iron-ore deposits of Surigao Province have just been surveyed by the division of mines of the Bureau of Science, and while it is not possible to draw conclusions until the results of a large number of analyses can be obtained, it appears that the findings of Mr. Cameron as reported by him originally are verified. The deposit appears to be similar in character to the Mayari iron ores which are being exploited in the vicinity of Nipe Bay, Cuba. The ore is a variety of laterite, a decomposition product from the weathering, under tropical conditions, of subsiliceous igneous rocks, and consists of hydrated oxides of iron in the form of clay and small concretions. The parent rock in Surigao appears to be a peridotite largely altered to serpentine. It occurs along the eastern coast of the province from the barrio of Capandan, Guigaquit, to the barrio of Adlay, Cantilan, a distance of 20 kilometers, and with its cover of iron ore extends inland over a belt ranging up to about 6 kilometers in width. Flanking this area are sedimentary rocks, tuff-sandstones, limestones, and shale. The vegetation, which is very sparse and of a peculiar character near the coast, gradually becomes more abundant and normal in character toward the interior.

The iron-ore deposit is unusual in that it covers a thoroughly dissected country made up of fairly sharp ridges and precipitous valleys. Other known iron-ore deposits of this class occur on nearly level plains or plateaus. Surigao is also a region of heavy rainfall (more than 3 meters annual) with practically no dry season, whereas one of the theories brought forward to explain the origin of ferruginous laterites involves a condition of alternating and marked seasons of drought and rainfall. According to the first analyses made on samples taken by Mr. Cameron the chemical character of the material is such as to make it a valuable iron ore. A large number of samples taken so as to reveal the character of the deposit as a whole are now being analyzed.

NEW AUSTRALIAN STEEL PLANT

The new iron and steel works of the Broken Hill Proprietary Co. (Ltd.), at Port Waratah, Newcastle, New South Wales, occupy a site of 264 acres in close proximity to the rich coal fields and limestone deposits, and have splendid harbor facilities. The entire plant, which has been installed at a cost of about $7,000,000, consists of the most up-to-date and approved American machinery for steel making, and was erected under the management and supervision of Mr. David Baker, a well-known American steel expert, and the various processes of manufacture are in charge of American superintendents. It is the intention of the management to limit activities for the present to the making of steel rails, it being estimated that the one blast furnace and battery of open-hearth furnaces, working at full capacity, can supply 400 tons of steel per working day to the bloom mill and rail mill, which would be equivalent to 120,000 long tons of steel rails per annum. The total yearly requirements of Australia for steel rails are considered to be about 150,000 tons, while the total imports of iron and steel in a more or less manufactured condition were for 1913 over 400,000 tons, with a local value of about $36,500,000, the principal items being: Pig iron, $1,080,000; plain and sheet, corrugated, $4,550,000; galvanized, not corrugated, $4,900,000; steel rails and fishplates, $6,230,000; bar, rod, and angle, $5,730,000; iron and steel wire, $3,110,000; pipes and tubes, $4,230,000. The present epuipment does not provide for the production of rods, sheets, structural steel, or wire, but the plant is so laid out that the capacity of the rolling mills can be quadrupled by the addition of other blast furnaces without impairing in any way the economical handling of materials.

The company already has in hand contracts to supply the Federal Government with 30,000 tons of rails (about 250 miles), and the New South Wales Government has ordered 750 tons weekly for 12 months. A smaller plant, belonging to G. & C. Hoskins, exists at Lithgow, New South Wales, which at the present time has in hand contracts for 400 tons weekly, 12 months. Although this new enterprise will seriously affect the sale of American steel rails to Australia, which in recent years has amounted to about $5,000,000 per annum, it is gratifying that after a careful study of the largest steel plants in Europe and the United States, American equipment was selected as the best and most efficient. It also assures American manufacturers of such equipment that further business will follow when the plant is enlarged.

AUSTRALIAN SUGAR SHORTAGE

Australia will soon face a serious shortage of sugar, and importations will be necessary to satisfy local demands. The Colonial Sugar Refining Co., Ltd., states that it would be willing to import, but that to do so at prices as at present fixed would involve a loss of about $35 a ton. A responsible authority in Sydney estimates that 100,000 tons of foreign sugar will be needed to make good Australia's deficiency.

MINING IN MANCHURIA

Japan and Mining in Kirin Province.

In the course of an article on conditions in Kirin province (Manchuria) a special correspondent writing to the *Peking Gazette* has the following to say with regard to mining:

"According to the new Chino-Japanese Agreement, Japanese subjects have the right to select mines in three distinct districts to be known as mining districts in the Southern portion of Kirin Province. The actual sites of these districts are not yet determined or even surveyed, for mining operations in Kirin Province have always been carried out on a very crude scale, and everything connected with the mining industry is very vague and has yet to be moulded into shape.

"The most northern locality, where mining operations may be carried on, is Kang Yao in the Kirin prefectural district and some 100 *li* North of Kirin city, lying not far from the Sungari River. Kang Yao itself is a fairly important and well-known place as it is here that all kinds of earthenware utensils, tubs, etc., are manufactured, the district being rich in fireclay. A few miles away coal is found, being worked on a small scale by the natives; it is used by the makers of earthenware as well as in Kirin city, but as only working in a primitive manner has been carried on it is impossible to say whether the prospects of successful mining are good or not. But the acceptance of the opening-up of this district by Japanese has one important feature; *and that is that the Northern Boundary of the Japanese sphere of influence is carried some 100 li or more north of Kirin city which has until now been generally assumed to be the boundary.* This in time may acquire a very vital military significance for Russia as well as for China.

"The second locality, Chia Pi-kou, is situated some 400 li up the Sungari and nearly due south of Kirin City. Here gold mining will be permitted, but the district has been but little explored and in the past natives have only been washing the alluvial to be found in the riverlets and old tributary beds that run into the main river. The venture will therefore be entirely speculative. The third mining district where coal and iron may be mined by Japanese is known as Ho-Ling and the locality as Sha-Sung Kai, some 150 *li* to the South-West of Yenchi and not many miles from the Tumen river. As the Chinese population is very scant in this district the Chinese know little or nothing about its possibilities, but since both Japanese and Koreans are often to be met with there it is probable that investigations have been made by the latter. About 150 *li* due north of this locality is the famous Tien Pao Shan Silver Mine, which is owned by the Government and said to be very rich in silver. It is a somewhat surprising fact that the Japanese did not ask to have this locality for mining operations, and it is asserted in certain quarters that the reason for their not asking for this district is that they already hold an interest in this mine, which they acquired through a Chinese official. At the present moment I have no means of verifying this statement, but of course if such is the case the opening-up of coal and iron mines in the Sha Sung Kay locality (which is so adjacent) is very necessary in order to be able to smelt and extract the silver from the silver ore at the mine itself.

"If the opening up of these mining districts by the Japanese is carried out in an intelligent manner and on a large scale, a considerable benefit will be done to China and the laying of a foundation of a mining industry should give both direct and indirect employment to many. On the other hand, if the Japanese only play at mining, using it as a screen to get a foothold on the soil, the harm done to China will be incalculable. In these circumstances all mining development work that is started by the Japanese must be closely watched and reported on to the Central Government."

Rewarding Mining Men.

It is so against the ancient custom in China for officials to recognise the mere mining man or manufacturer of necessities that any evidence of a marked change of policy is worthy of record. In August the Governor of Heilungkiang petitioned the President to reward mining men named Chi Hsueh-po and Chao An-chen, and as a result they have been given the 7th and 9th classes respectively of the Chia-ho Decoration.

The petition of the Governor is as follows:

In asking for suitable rewards for merchants who have achieved marked success in mining operations, I hereby respectfully submit that of all the rich latent resources of the Heilungkiang province the treasure of gold ore on the border is of specially great value. Since these buried treasures need to be urgently dug out, those merchants, on whom we have to rely for capital to work these mines for the benefit of the country, especially those who have made prominent success, should be singled out and rewarded as a means to encourage others.

Now Chi Hsueh-po, a merchant who organised a gold mining company in the 3rd year of Hsuan Tung, by the name of Yu Ching Kou Gold Mine, has worked the said mine with all his energy and resources all these years; and since the company was made into a semi-official enterprise, he, in the capacity of Director, has shown unusual devotion and energy, resulting in the growing prosperity of the enterprise. Another man rarely found among mining merchants is Chan An-chen, the resident manager of the works, who has managed the works in a most orderly and efficient way. These two men have worked ever since the establishment of the company, and in a short space of four years they have added no less than five hundred or more thousand roubles. If further improvement is made they will certainly benefit both our mining affairs and finance materially. The enthusiasm of the said Chi Hsueh-po over mining affairs is further borne out by the fact that he has now created another mining company called Yu Yuan Gold Mining Company as well as assisting the Chun Yuan Company at Kochang in the prospecting of gold ores. Such enthusiasm is indeed worthy of our admiration. It has been the custom of the Ching-lan (the Governor himself) to recommend for reward those who have achieved success in mining operations. Now these merchants who have put in a large capital for the purpose of opening the sources of money, are in a way more worthy of reward than officials of the same merit. Will it please Your Excellency, therefore, to confer the 7th Class Chia-ho Decoration on Che Hsueh-po and 9th Class Chia-ho Decoration on Chao An-chen as an appreciation of their merits, in accordance with regulations; or it may please Your Excellency to reward them with tablets instead. We respectfully wait for your great decision, etc.

The President's reply: Chi Hsueh-po and Chao An-chen are hereby given the decorations as requested. The Ministry of Agriculture and Commerce is hereby ordered to take due notice, and the State Department is to notify the Bureau of Civil Appointment to the same effect.

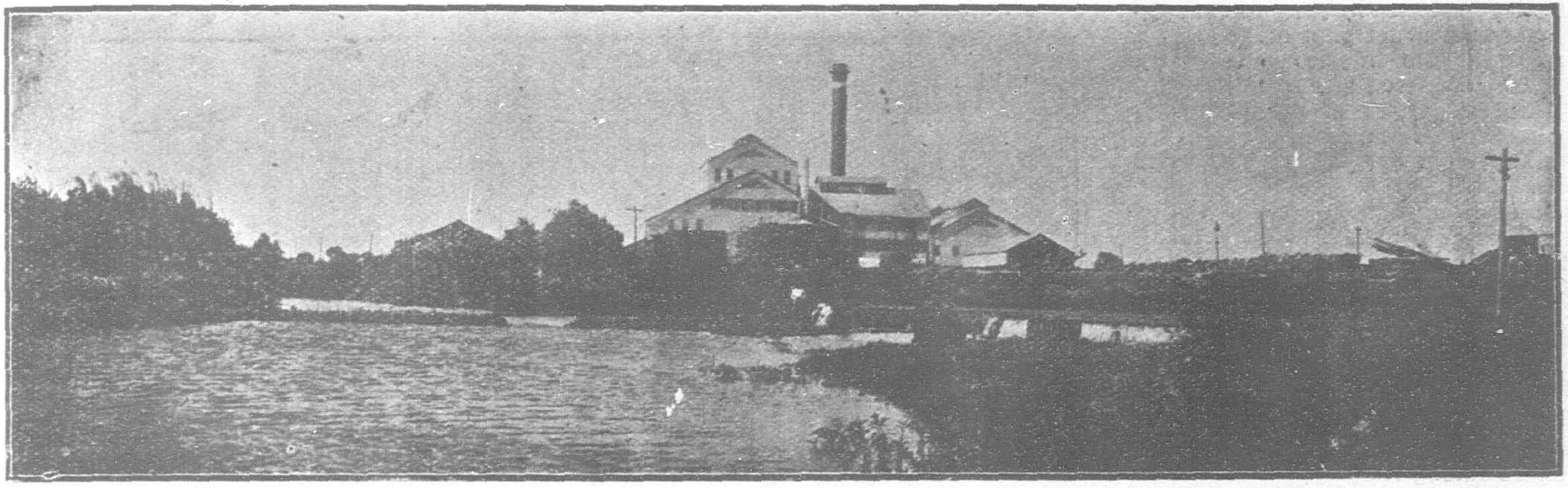
Mining in China.

FACTORS FOR AND AGAINST SUCCESS.

The prospects of mining operations in China and the possibility of their proving profitable to the investor are discussed in the *Mining Magazine*, which asks four questions, namely; Is there adequate evidence of the existence of mineral deposits of sufficient value to offer a substantial hope of exploitation? Do labour conditions and other local factors influencing the cost of operation indicate that mines can be operated at a sufficiently low cost? Is there, in the case of the base metals and minor minerals, a reasonable expectation of adequate and growing markets that are safe from capture by imported products? Are the laws and regulations governing the mining industry such that mining operators can expect to conduct their enterprises under satisfactory and stable conditions? Proceeding to discuss these factors the journal says:—

That mineral deposits of sufficient richness to justify exploitation exist in China there is no doubt. In a paper on the Mineral Production and Resources of China (published in the FAR EASTERN REVIEW for July, 1912,) Mr. Thomas T. Read has summarized the then existing knowledge of the mineral deposits of China, and as an engineer qualified by some years' residence in the country, his views are of special value. He showed that coal is so widely distributed throughout China as to be almost everywhere available with comparatively little transport, and that its quality is generally good and in many cases excellent. One large mine of iron ore of good quality has been developed, and there is evidence that other deposits of similar ore exist, with a presumption that there are many such. Considerable amounts of copper have been produced by native methods in south-western China, though hampered by lack of transport facilities and a locally scanty fuel supply. The same remark applies to zinc, except that the deposits appear to be of even greater value. Gold deposits are found chiefly along the northern and western borders in districts now difficult of access. These also offer much hope of profit under more favourable conditions, which may reasonably be expected to be eventually attained. Altogether it is evident that China is a mining region of great promise.

The present laws and mining regulations of China are not conducive to the investment of foreign capital in mineral deposits. Generally speaking, foreign firms can only engage in business in certain restricted areas, known as treaty ports, within which they are under the jurisdiction of their own Consuls, not being subject to Chinese laws or paying any taxes to China other than import duties, which are low. The treaties concluded at the end of the anti-foreign outbreak in 1900 provided that China should revise its mining regulations in such a way that foreign capital should be free to invest in Chinese mining enterprises. In the years that have since passed several codes of mining regulations have been promulgated, the latest having appeared about a year ago. None of these codes showed evidence of having been prepared by persons gifted with an understanding of the mining industry of China or of any other country, and the restrictions imposed by them made mining investments unattractive to both Chinese and foreigners.



SHAROKEN MILL OF THE TAIWAN SUGAR COMPANY

COMMERCE AND INDUSTRY OF FORMOSA

[BY CONSUL EDWIN L. NEVILLE, TANSUI]

The commerce of Taiwan (Formosa) will probably never be very extensive. The habitable land is confined to relatively narrow strips on each side of the island and a few river valleys. These areas, while fertile, are limited and are too small to support a large population. There are hardly any industries, and the mineral resources are confined to a few gold mines and some coal and oil deposits, none of which have as yet proved of great value. Silver and copper have been found in small quantities.

Population of the Island

The population of the island is estimated at 3,500,000. Of this number about 12 or 13 per cent live in towns of more than 5,000 inhabitants. These numbered 22 in 1912.

The central part of Taiwan, a mountainous district, most of which is not arable, is inhabited by aboriginal tribes, many of them entirely uncivilized. They number between 120,000 and 125,000.

Most of the imports are manufactured goods of one sort or another, or special articles of diet which appeal to the palates of the local inhabitants. The imports of manufactured goods consist of cloth, building materials, including iron manufactures and lumber, and chemicals and fertilizers of all kinds.

These imports are paid for principally by the export of rice, sugar, tea, and camphor. Sugar is a subsidized industry, the creation, so far as its present status is concerned, of the past few years. Camphor is a Government monopoly, instituted to prevent indiscriminate destruction of the camphor forests by private dealers. Most, in fact practically all, of the rice and sugar are sent to Japan. The United States is the largest consumer of Formosa tea and camphor, which are about the only articles exported to the United States.

Total Value of Trade of the Island

The total value of the trade of Taiwan for 1914 was $55,583,531, a decrease of $1,304,046 from the amount for 1913. This decrease has been constant since 1912, when the exports and imports reached some $62,000,000. The decline, so far as the year 1914 is concerned, appears exclusively in the total of imports, which amounted to $26,340,757 during 1914, against $30,305,148 during 1913. This diminution of imports is attributed to two conditions—curtailment of governmental activities here and an inability or disinclination on the part of investors to put more capital into enterprises.

Taiwan, from an industrial standpoint, is not at all developed. A large proportion of the imports in the past represented expenditures for public works or improvements and capital in the shape of machinery of various sorts for the development of local resources. A curtailment in the outlays of the local government will consequently show immediately in the dropping off of imports. This is a result of the absence of industrial plants of any kind.

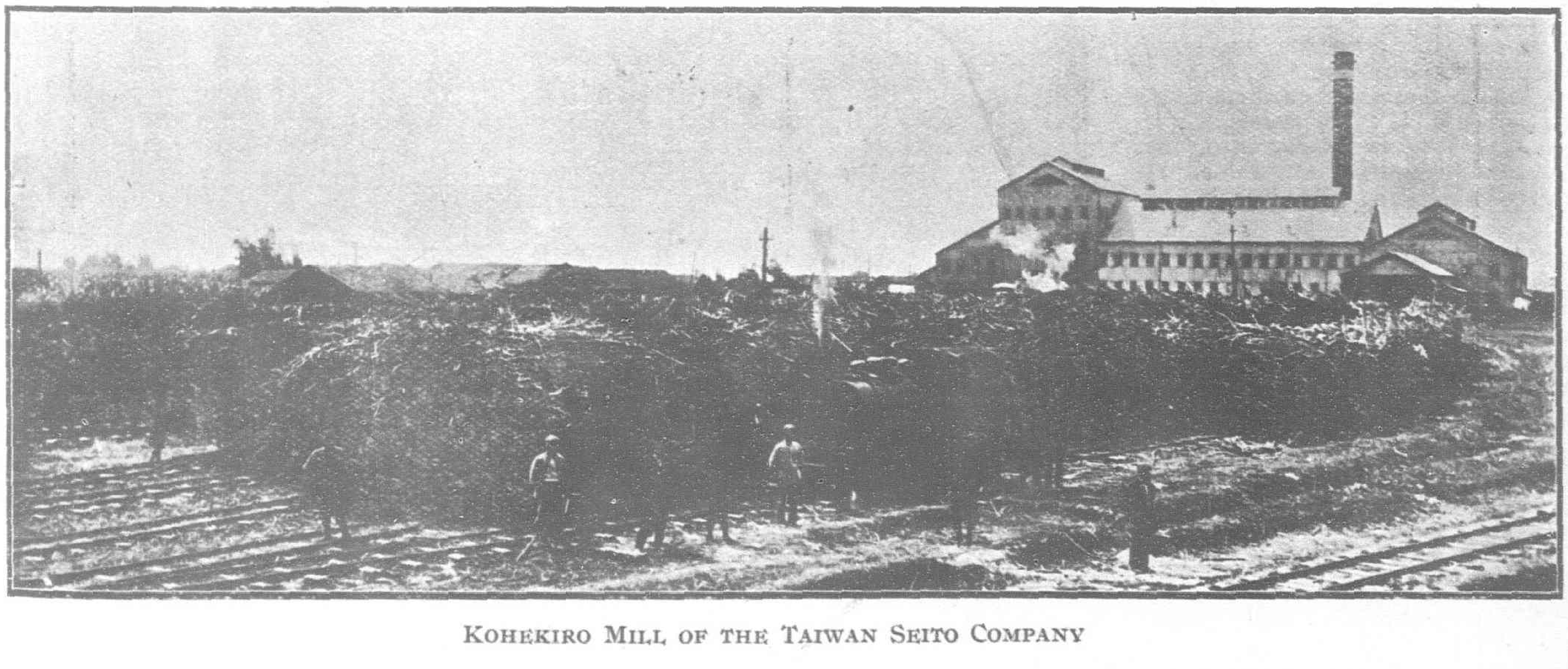
Value of Exports Raised by Increased Sugar Price

Exports from Taiwan for 1914 show a gain of $2,660,345, from $26,582,429 in 1913 to $29,242,774 in 1914. By far the greatest part of this is due to increases in the value of the sugar exported.

Of the total trade of the island in 1914, $42,637,398 represents commerce with Japan, but much of it is in reality indirect trade with foreign countries. Kobe and other Japanese ports offer special transhipping facilities for Taiwan. Merchandise is frequently shipped to Japan, sold there, and then exported. There is free trade between Japan and Formosa; Japan offers a wider market than this island, and there are excellent means of communication. A considerable portion of the import trade of Taiwan pays duty in Japan and appears as Japanese imports.

Shipping companies prefer in dealing with Formosa to transship at Kobe, as the Osaka Shosen Kaisha and Nippon Yusen Kaisha operate regular triweekly steamers between Japan and Keelung. Despite the extra distance, it is actually cheaper, in shipping from London or New York via Suez, to transship at Kobe instead of at Hongkong.

Formosan trade with Japan, which constitutes about two-thirds of the island's total,



KOHEKIRO MILL OF THE TAIWAN SEITO COMPANY increased from $41,466,426 in 1913 to $42,637,398 in 1914, showing a net gain of $1,170,972. This is due to a gain in the value of the exports to these Japanese ports from $20,137,093 in 1913 to $22,777,582 in 1914. Imports from Japan showed an equally decided decrease, falling from $21,329,333 in 1913 to $19,859,816 in 1914.

The increase in exports to Japan was a result of the greater demand for raw sugar. The exports of this commodity rose from 136,618,136 pounds, valued at $9,708,581, in 1913 to 302,376,893 pounds, valued at $13,781,187, in 1914. This gain was offset to some extent by a decline in the export of rice to Japan, which fell from a value of $7,823,961 in 1913 to $3,446,661 in 1914.

There was a large increase in the quantity and value of the oolong tea shipped to Japan—412,067 pounds in 1913, with a value of $56,040, against 1,565,526 pounds in 1914, valued at $191,839. This total includes a large amount of tea later shipped from Japan to foreign countries.

Formosan bananas likewise seem to have found favor in Japan, as 19,449,117 pounds of them, worth $292,334, were shipped there in 1914, a gain of nearly 8,000,000 pounds in quantity and over $100,000 in value. Crude camphor shipments to Japan in 1913 were 602,120 pounds, valued at $180,376, and in 1914, 2,496,310 pounds, valued at $751,594. Japan now ranks next to the United States in receipts of camphor from Taiwan. It is quite probable, however, that some of this camphor figures among Japanese exports.

The decrease of imports from Japan seems to have been general in character and not confined to particular items. The year has been a dull one commercially.

More Kerosene Oil Received from Japan.

One item of import from Japan showed a marked increase—kerosene oil. This amounted to 786,398 gallons, valued at $134,154, in 1913, and had risen to 2,119,340 gallons, valued at $310,133, in 1914. Japan now supplies nearly as much oil to this market as the United States and the Dutch Indies combined. Some of it is of fairly good quality, but the larger part is of low grade. Some of this oil is re-exported and some of it is used by local dealers to dilute and adulterate the higher grades of American and Dutch Indies oil.

Increased Trade with China.

Trade with China showed a gain both in imports and exports during 1914. The population of the island is almost completely Chinese in origin, and the commerce with China ranks next to that with Japan. It is special in character, being largely confined to articles of use to Chinese.

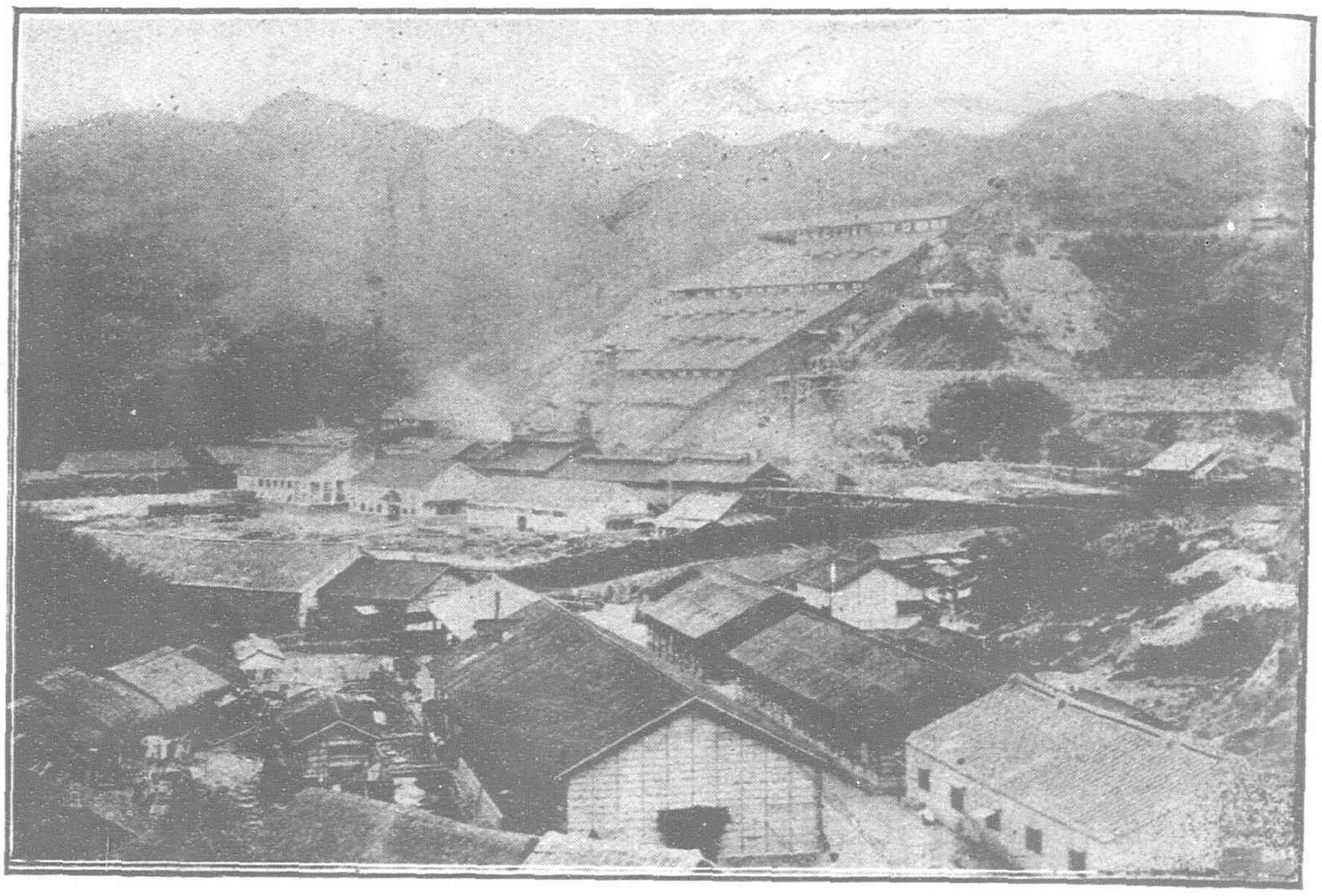
Most of it consists, on the import side, of Chinese paper, grass cloth, Chinese tobacco, imported by the monopoly bureau, bean-oil cakes, and Chinese drugs, fireworks, and the like. Exports to China are made up principally of China grass fiber, fish, matches (a re-export), pouchong tea, and kerosene oil.

The exportation of oil is a new development. In 1913 only 50 gallons were exported. In 1914 there were 1,003,649 gallons, valued at $124,350, sent to China. This oil is largely low grade.

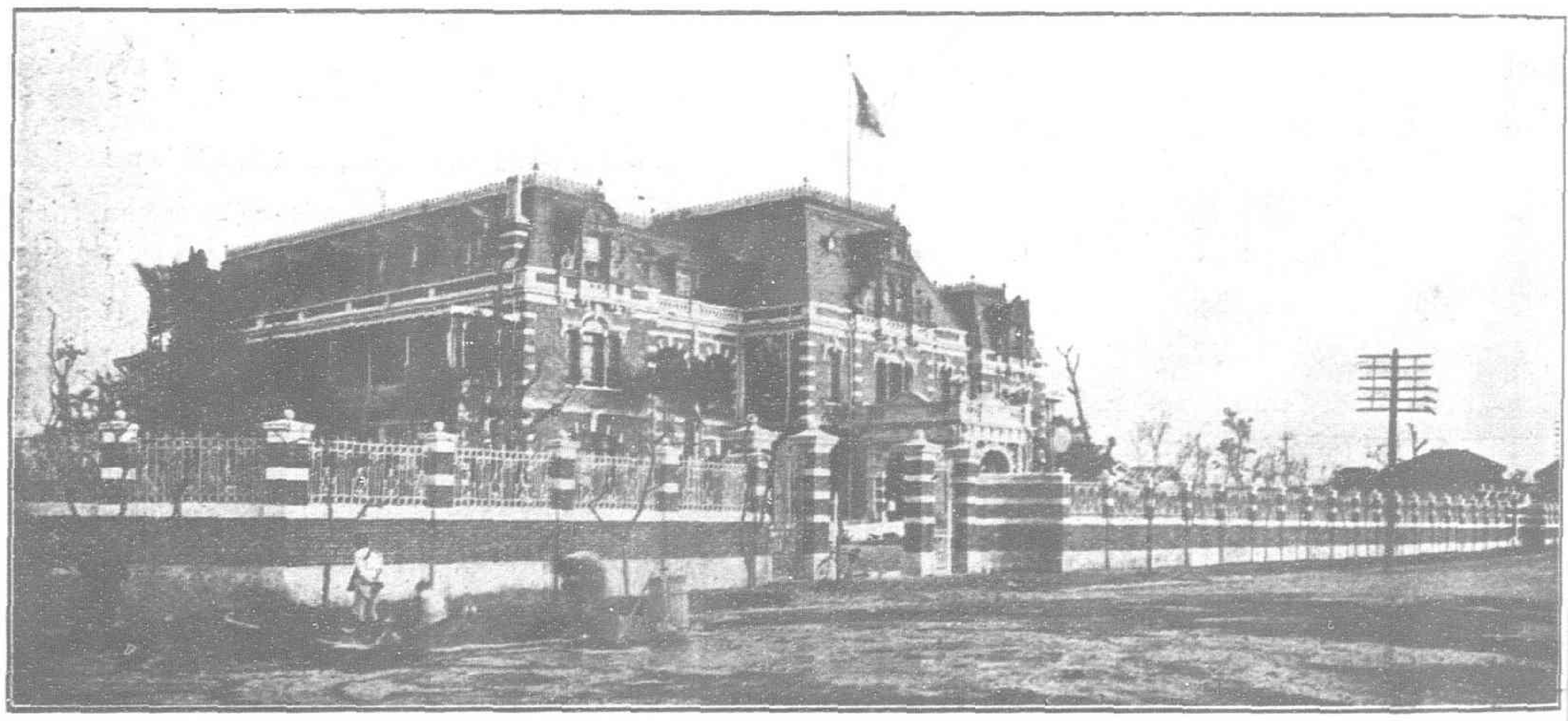
The total value of the trade with China was $5,372,042 (imports, $3,638,830; exports, $1,733,212) in 1914, compared with a total of $5,064,405 (imports, $3,610,870; exports, $1,453,535) in 1913.

Trade with United Kingdom and Germany.

Trade with the United Kingdom showed a decrease of $225,866 in imports and $216,843 in exports, the total decreasing from $1,398,782 (imports, $862,323; exports, $536,459) in 1913 to $956,073 in 1914. The decrease in imports was general in character. The decline in exports was due to lessened purchases of camphor and tea.

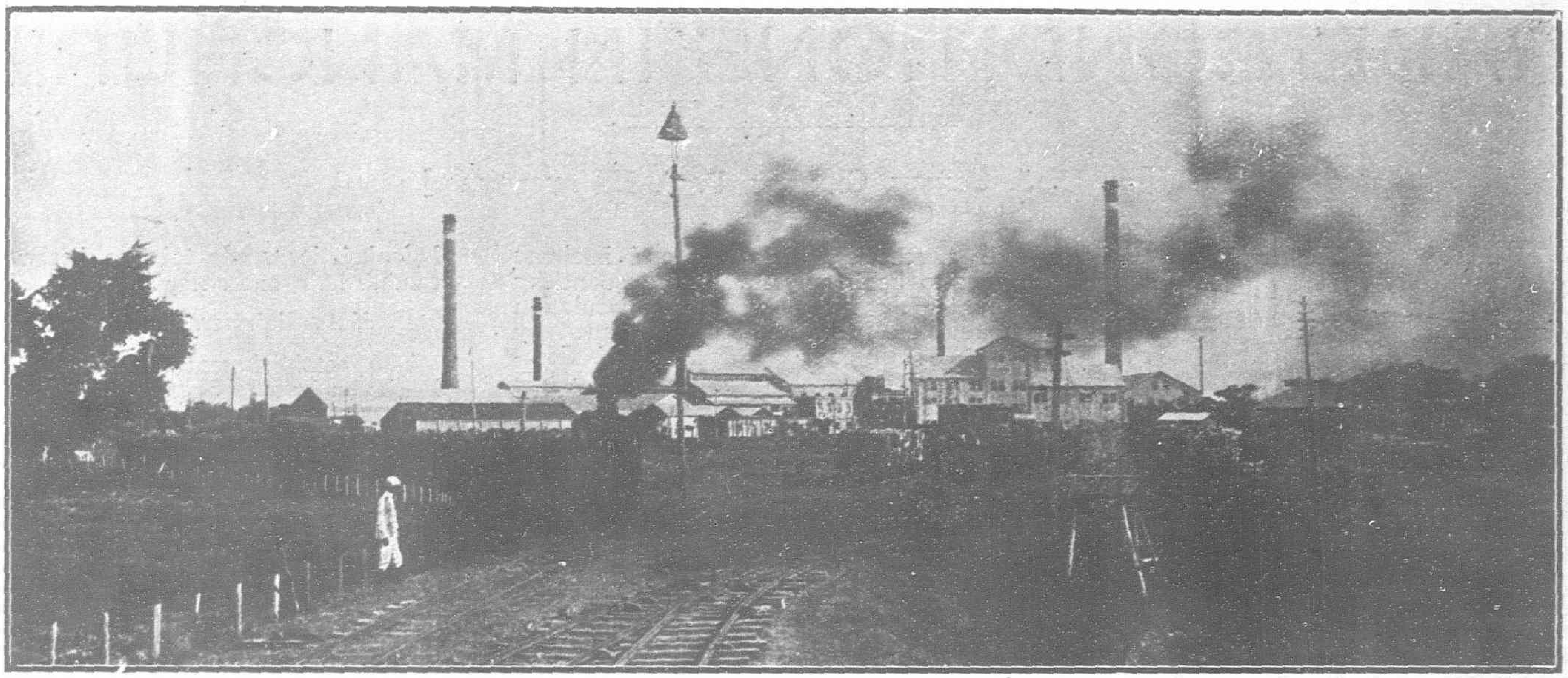


The Zuiho Gold Mine in Formosa



Daihoku Station on the Imperial Taiwan Railways

Rurun Station on the Imperial Taiwan Railway



Kyoshito Mill of the Taiwan Sugar Company

Despite the war, imports from Germany show only a small falling off from the figures of 1913 ($264,112 in 1913, against $260,499 in 1914), while exports to that country show an actual gain ($371,074 in 1913 and $460,140 in 1914). Imports from Germany, like those from other European countries, are of a general nature and have never been very large. The exports to Germany consist almost completely of crude camphor.

Decreased Camphor Shipments to United States.

Exports to the United States, as shown by invoices certified at this consulate, amounted to $3,361,894 in value in 1914, as against $3,420,140 in 1913, representing a decrease of $58,246, due to a decline in the value of the exports of crude camphor. The export of this commodity to the United States fell from 3,616,935 pounds in 1913, valued at $1,168,340, to 3,496,969 pounds in 1914, valued at $1,048,418. The price of crude camphor has decreased from 78 yen ($38.84) per picul (133½ pounds) in 1910 to 72 yen ($35.86) per picul in 1914. This decline in price, as well as some of the decline in quantity and value of the article shipped to the United States, is said to be due to some extent to the development of synthetic-camphor manufacture in the United States.

The only other important article of export to the United States was oolong tea, which showed an increase both in quantity and value. The declared exports of this article in 1913 were 14,920,330 pounds, valued at $2,249,313, and in 1914, 15,398,066 pounds, valued at $2,312,401.

There was one shipment of Formosa hats valued at $241. It seems unlikely that this trade will ever amount to much. At one time there seemed to be a possibility that the Formosa hat would be a competitor of the Panama variety, but it has never been possible to secure any uniformity of grade. Shipments of this article have never resembled the samples.

Decreased Imports from United States.

Imports from the United States were $629,796 in 1913 and $398,646 in 1914.

The decrease in imports appears chiefly in kerosene oil, flour, condensed milk, and materials for railway construction. The decrease in the last-mentioned item is explained by the fact that no new railway construction of importance was undertaken here during 1914; the only activity in this line was the opening of a small private road between the towns of Nanto and Shoka, a distance of about 25 miles, in the west central portion of the island, which took place early in the summer.

Condensed milk imports are given as $139,912 in value, of which $66,492 worth are credited to the United States. The imports of this article in 1913 were valued at $166,560. Of this amount the United States was credited with $90,454. Condensed milk imports from Japan amounted to $73,389 in 1914 and to $76,088 in 1913. Imports of flour fell from $836,808 in 1913 to $664,457 in 1914. Practically all of this amount appears as a Japanese import.

While it is probable that most of the flour and much of the condensed milk imported from Japan are transhipped American goods, it is none the less true that both these comestibles are manufactured to some extent in Japan, too. Japanese condensed milk retails here for 26 and 28 sen (about 13 or 14 cents), while the imported article can not, in view of the duty (yen 5.55, $2.76, per picul, 133⅓ pounds), be retailed for less than 30 sen (about 15 cents) per tin.

Flour prices can not well be quoted at this time of varying values. The import duty on wheat is 77 sen (38 cents) per picul and on wheat flour yen 1.85 (92 cents) per picul.

Send Only Tea to Philippines

The only article of export to the Philippines was tea. Oolong tea to the extent of 7,861 pounds, valued at $1,263, and 193,589 pounds of pouchong tea, valued at $23,482, were sent to the islands in 1914. Both these figures represent a slight gain.

Pouchong tea, which is merely ordinary Formosa oolong with jasmine or other flowers mixed in for flavoring purposes, is a favorite beverage among the Chinese. The pouchong tea exported to the Philippine Islands is probably entirely consumed by the Chinese community there.

There were no declared exports to Hawaii or to Porto Rico.

Trade with Other Countries

Trade with the Dutch Indies is almost altogether confined to imports of kerosene oil and export of pouchong tea. As was the case with American oil, imports of kerosene from the Dutch Indies showed a considerable falling off (1,778,183 gallons, with a value of $215,892, in 1913, as against 1,301,473 gallons, with a value of $162,745, in 1914). Exports of pouchong tea to that destination, however, increased from 3,286,562 pounds, valued at $528,024, in 1913, to 4,116,698 pounds, valued at $668,115, in 1914.

Imports from Turkey and Persia consist completely—and from British India largely—of opium. The monopoly bureau's imports of this drug decreased from 372,467 pounds, valued at $1,879,338, in 1913, to 224,940 pounds, valued at $920,015, in 1914.

Rice and Sugar Market

Taiwan is dependent for its material prosperity on its agricultural products to a greater extent than in most cases. Contrary to conditions obtaining in many parts of the world, the main food crop, rice, has been so low in price that the farming population's income has been seriously affected. Increased prices for sugar and greatly increased sales of that commodity relieved matters somewhat.

Mount Ari Timber Project—Crude Petroleum

The Mount Ari timber project, the subject of frequent previous reports, has not yet proved a commercial success. The railway built to transport the logs from the mountains has entailed such large upkeep and repair expenses that it has been found difficult to market the finished lumber profitably at current prices.

The output of crude petroleum in 1914 is given as 641,763 gallons. It is all obtained from the vicinity of Byoritsu, where a refinery is situated. It is a low-grade oil.

The export of gold coins and bullion, practically all of the latter being from the mines of Taiwan, increased from $431,107 to $742,392.

The number of vessels that entered this port in 1914 was 393 and the total tonnage was 679,260, compared with 438 vessels, 792,724 tons, in 1913. There were 5 American vessels, 40,651 tons, compared with 8 vessels in 1913, carrying 65,280 tons. The number of British vessels was 20, with 63,602 tons, and the number of Japanese 358, with 558,847 tons.

MANILA HEMP CROP

That the Philippine Islands will produce approximately 40,000 more bales of hemp (abaca) this year than they did in 1914, when 967,000 bales were produced, is the estimate of Fiber Export Saleeby. Production estimates show a total of 1,030,000 bales, divided as follows: Albay, 230,000; Leyte, 260,000; Sorsogon, 135,000; Camarines, 115,000; Samar and northern Mindanao, 95,000 each; south Mindanao, 40,000; all other Provinces, 60,000. These figures include only new gradings up to December 31. It appears however, that prices are lower than usual, and despite the increased yield the crop will net some $2,500,000 less than it ordinarily would.

TRADE CONDITIONS IN MANCHURIA

[By U. S. Consul General P. S. Heintzleman]

The trade of the Mukden consular district for the year 1914 was unfavorable on account of the rather inferior crops in 1913, the drought in the late spring of 1914, the disastrous floods in September, 1914, the war in Europe and the Far East, the chaotic currency conditions, a severe winter, and the difficult and complex political situation.

The first half of the year throughout Manchuria was dry; consequently in the southern districts the wheat crop was a failure. In the north, with its later harvest, the crop was not so bad. The yields of millet and beans were fully up to the average, although the quality of both was inferior. This was especially the case with large millet, which did not ripen properly and was less sweet and not so nourishing. Thus the distilleries, which abound in Manchuria, were affected, as the samshu was less in alcoholic spirit. Maize was largely a failure. It did not ripen properly and a considerable quantity rotted in the fields. The tobacco and hemp crops were fairly abundant, though the former was not well dried.

Cultivation of Indigo

Indigo has largely gone out of cultivation as a result of the import of vast quantities of aniline dyes. The difficulty with the native indigo is that it is prepared in a paste and must be transported without being touched by the frost. It is almost always late autumn before it is strained off from the vats, and then it is often frosty. If the proposed Japanese railway from Kaiyuan to Hailungcheng were constructed it would tap the chief indigo district and the trade might revive. Dry-land rice was fairly good and cheap and the Chosen (Korean) paddy rice yielded well. The wild-oak silk was a success, though the drought in the spring of 1914 made the tender leaves late and the birds eager to devour the worms. The late yield was good, despite the wet weather. There were no early frosts and no reports of special disease have come in from the silk districts.

Factors Detrimental to Trade

Among the principal factors which operated to the detriment of trade in 1914 were the chaotic conditions of the paper currency, the issue of debased coins, and the scarcity of metallic money. These are believed to have had a more harmful influence upon business than the war. The provincial banks continued to issue indiscriminately unlimited quantities of notes. The specie reserves for these note issues were far from adequate, and there was a run on the banks from spring to the end of the year. The banks cashed daily only a small percentage of the notes presented. An applicant with paper to the value of small coin $10 would receive on any one day only small coin $2 to small coin $3. Foreign merchants, too, applied at the bank for the redemption of a large amount of paper notes. Through the medium of the local authorities an arrangement was made by which the demands of foreign applicants were met comparatively quickly. The police prohibited money changers from carrying on their business on the streets of Mukden as heretofore, the object being that the people instead of selling their notes to the money changers, who would only have arranged to have them presented to the banks, should use them for carrying on business. The board of finance issued an order in May, 1914, that the Bank of Industries should call in and redeem all their notes and cease to issue new ones. The functions of this bank were accordingly transformed to attending solely to the redemption of its notes. While the notes now in circulation have been considerably curtailed, there is still a scarcity of money and business continues to be hampered. Large quantities of counterfeit notes were in circulation throughout the year. The notes issued by the Bank of China and the Bank of Communications were printed in America, while those issued by the Bank of Industries, the Government Bank of the Three Eastern Provinces, and the local branch of the Government Bank of Heilungchiang, were printed in Tientsin and lent themselves to imitation. The counterfeit notes were circulated more in the surrounding districts than in Mukden, where they would be more readily detected.

Principal Foreign Imports

The principal foreign imports into this district during 1914 consisted of cotton piece goods, kerosene, flour, soap, sugar, matches, candles, and arms and ammunition. Of these articles the United States shared only in the following (the figures are approximations, based on the estimates of representative foreign and native firms and on incomplete customs returns, but they may be accepted as fairly accurate; exact statistics will be given in the annual report from this consulate general on the Manchurian trade in general): Sheetings, 125,000 pieces; shirtings 80,000 pieces; drills, 35,000 pieces; jeans, 3,000 pieces; kerosene, 11,000,000 gallons; and flour, 176,000 barrels. The chief competitors in these lines of goods are as follow: Cotton piece goods, Japan, United Kingdom, and Russia; kerosene, Russia and Sumatra; flour, native mills. Soap is furnished by Japan, United Kingdom, and Russia. Japan and Hongkong supply the matches; the United Kingdom the candles; and Germany up to the outbreak of war, the arms and ammunition. Japan now furnishes most of the munitions.

There are limited imports of sewing machines, bicycles, condensed milk, canned goods, tools, agricultural implements, watches and clocks, stoves, and worsted and other woolen goods, in which the United States participates to a small extent and which offer a favorable field for extension. The following goods may also be competed in if prices and terms are satisfactory (the consumption in some of these lines is not large at present, but the field is capable of extension): Leather and leather goods, jewelry, machinery and fittings, boots and shoes, underwear, nails, screws, hardware, railway plant and material, musical instruments, knitting machinery, chemical products, ready-made clothing, enameled ware, ironware, gramaphones and accessories, photographic materials, galvanized iron, roofing and flat sheets, typewriters, mining machinery, and electrical fittings. The chief competitors with the United States in these articles are the countries of northern Europe and Japan.

Market for Agricultural Implements—Articles of Production

As this district is devoted chiefly to agriculture, a fair trade in modern plows, harrows, etc., could be developed here if stocks were kept and the implements demonstrated. Threshing machines worked by animals would be an immense benefit to this land, and should in time, along with the agricultural development of this region, find a market here. The machines should be cheap but strong to suit local conditions.

The following are articles of native production that may be exported, the wholesale export prices of which compare favorably with those of similar goods produced in other countries: Beans, bean oil, bean cake, coal, hides, goat and dog skins, mats, furs, horse hair, bristles, seeds, tobacco, beeswax, cereals, camel's hair, and sheep's wool.

Establishment of Iron Furnaces

The establishment of iron furnaces at Penhsihu by a Japanese concern, the Penhsihu Colliery & Mining Co., may be the beginning of a great industry, as the hills to the northeast of that center are known to contain much and quite a good quality of ore, while coal and lime are abundant and water power may be easily developed. The pig iron produced by the company is found to compare well with the British product, and the management is confident of its ability to improve the quality. The producing capacity of the furnaces opened in November, 1914, is planned to be 150 tons per day; at present the daily output is limited to about 110 tons. It is expected that in due course the output may be increased to 200 tons per day. The company is perfecting its sales plan abroad. At the rate of 150 tons per day the annual total output will reach about 54,750 tons. About 35,000 tons of this amount will be supplied to the South Manchuria Railway workshops, at Dairen, and to the Kawasaki dockyard, Kobe, Japan. The remainder is to be exported to various points in Japan, the bulk of which will be shipped via Newchwang, where the wharf and harbor improvements made by the South Manchuria Railway in 1914 are expected to facilitate greatly the export of iron and coal. At present import pig iron is quoted in Japan at $20 or $22.50 per ton. The company is prepared to offer its product at $17.50 or $20.

Copper and Gold—Output of Coal

Copper should be the next item to be worked in this region, and also gold from the mother lodes. Coal continues to be produced in the Fushun mines in increasing quantities. The production in 1914 was 2,336,000 tons as against 2,038,000 tons in 1913. This coal goes chiefly to Japan, but the demand for it is increasing throughout eastern Asia. It is competing favorably in Korea with the Japanese coal. The Fushun collieries are a great boon to Manchuria, supplying as they do the railways, the large distilleries, and many hongs with fuel. The coal is sold, however, at prices that, in view of the cost of production, are particularly high. The prices are higher locally than in Tientsin. This is due to there being practically no competition here. The production of the two other principal coal mines in this district in 1913 and 1914 was as follows: Yentai, 76,832 tons in 1913 and 89,637 tons in 1914: Penhsihu, 270,782 tons in 1913 and 315,912 tons in 1914.

The Cotton Goods Industry

The Kuangli Co., of Mukden, was organized in 1911 with a capital of $1,500,000 for the manufacture of sheetings. The machinery consists of 30 looms, and the motive power is furnished by kerosene engines. About 50 operatives are employed and the daily output is 1,200 yards. The same company operates a cotton mill at Liaoyang, which contains a total of 24 looms—16 for sheetings and 8 for nankeens. The production of this mill in 1914 was 6,500 pieces of sheetings and 4,500 pieces of nankeens. A cotton mill at Newchwang operates 20 power looms for nankeens and 36 hand looms for sheetings. Last year this mill turned out 11,000 pieces of nankeens and 10,000 pieces of sheetings. The output from these three small establishments is now too small to have any effect on the market, but it is worth noting as an indication that in time cotton manufacturing in Manchuria may become an industry of some importance.

Other Industries

In the latter half of last year a Japanese flour mill, operated by electricity, was established at Liaoyang. Also oil engines were installed in several bean mills, superseding animal and hand power.

The local industry in the manufacture of samshu, the native spirit distilled from corn and kaoliang, was seriously affected by the prohibition of the traffic in alcoholic liquors in Russia and its temporary prohibition within the area of the Chinese Eastern Railway. As much of this product was shipped to Siberia and North Manchuria, the trade practically ceased, and 80 distilleries in this district were closed.

The Sanlin cigarette factory, Mukden, under Japanese management, has a capital of $10,000. Some 50 Chinese hands are employed and the annual output is estimated at $40,000.

The Hoizumi glass factory, under Japanese management, with a capital of $12,500, employs 12 Japanese and 32 Chinese hands. The value of the annual output is given at $17,500.

Tramcar Line—Manual Training Institution

The Mukden Horse Tramcar Co. operates the line between the city and the South Manchuria Railway station. The capital is $95,000, subscribed by Japanese and Chinese in the proportions of 6 to 4, respectively. The yearly profit of the company is about $7,500.

The Government Manual Training Institution was established in 1909 to teach Chinese weaving, carpentering, dyeing, embroidering, manufacturing laquer ware, hardware, carpets, and leather goods. There was $20,000 spent on the building and $13,000 on machinery and materials; $13,000 is appropriated annually for running expenses.

Exports to United States

There are no exports from this district to the United States except small shipments of hides, horsehair, and bristles. The bulk of the exports to the United States from Dairen and Newchwang, however, is produced in this district—beans, from which bean oil for export is expressed, buckwheat, maize, and coal. Mukden is virtually a distributing point for imported goods and a depot for the collection of native produce destined for transshipment to the coast, where the headquarters of the leading foreign firms are still located. The declared exports to the United States from this consular district, including Newchwang, increased from $115,386 in 1913 to $219,278 in 1914.

No Statistics Available Showing the Trade of the District

As import and export duties are paid at the port or frontier station where the goods enter or leave Manchurian Provinces it has not been found necessary to establish a customs house at Mukden. Though a commissioner is stationed here attached to the provincial foreign office for advisory purposes in customs affairs in Manchuria generally, he collects no revenue and records no statistics of trade. Therefore no statistics are available showing the trade of the Mukden district, but an approximate estimate may be made by consulting the customs statistics contained in the reports of the consular districts of Newchwang, Dairen, and Antung—the ports through which passes the import and export trade of this consular district, except the extreme eastern portion, the Hunchun and Chientao districts. The only statistics of Mukden trade available, therefore, are those supplied by the Japanese railway administration, and these do no more than show the principal railway goods coming to and leaving the city. [A table showing the articles and quantities arrived at and forwarded from the South Manchuria railway station, Mukden, during 1913 and 1914 may be examined at the Bureau of Foreign and Domestic Commerce.]

Increased Demand for Cotton Goods

Business in cotton piece goods is steadily increasing, and Mukden will soon supplant Newchwang as the chief distributing center for this class of merchandise. While all the standard chops have added to their sales, Russian printed cottons have forced their way into the market, by reason of their good quality, suitability of design, and moderate price, even holding their own against cheaper Japanese goods of the same class. With the exception of the Mitsui Bussan Kaisha, which is the local agent of the Manchurian Cotton Exporters' Association, and the three agencies of other Japanese firms handling piece goods, this business remains almost wholly in Chinese hands, the direct foreign (non-Japanese) importation forming a small proportion of the whole. While the market for piece goods in this district is growing yearly, yet the trade in American goods continues to show decreases. This trade is now practically in the hands of the Japanese, whereas 10 years ago it was held by Americans. Cheap cottons of a grade little used in the United States are sold in large quantity.

It is suggested that as the American market is reported to be overstocked with cotton the present would be an opportune time for the leading American manufacturers and exporters to combine in sending a representative here to investigate the conditions surrounding this trade with a view to establishing a large American-managed distributing agency in Manchuria. Such a syndicate might well include capitalists who have investments in banking institutions and steamship lines interested in Far Eastern trade. At the same time the American mills should manufacture a line of piece goods especially for this market at prices competing favorably with Japanese lines. The local agency would have to be given strong support and be permitted to grant terms equally as favorable as those extended by any of the competitors in these lines, Japanese or European. Stocks should be carried at the principal distributing centers and the goods should be shipped via Japan and Chosen to Antung or direct to Dairen, instead of to Shanghai, in order that advantage may be taken of the one-third reduction of customs duty at Antung on rail-borne goods and of the reduced through freight rates on the Japanese railways, which were designed to favor both Antung and Dairen. To take such a step now would possibly mean the recapturing of some of the trade lost during the past few years.

[Confidential Bulletin No. 30, Mar. 10, 1915, issued by the Bureau of Foreign and Domestic Commerce, gave important details on the cotton piece-goods trade of Manchuria.]

The Flour Industry and Imports

Great quantities of flour find a ready market in this district. The trade here, as elsewhere, is of a fluctuating nature, prices rising and falling at the shortest notice, according to local and foreign wheatcrop conditions and the rate of silver exchange. Most of the output of the Tiehling flour mills, the Manchurian Flour Manufacturing Co., at Shuang Cheng Po, and the Chinese flour mills at Shuang Chen Tin and at Changchun finds its way to this market and competes with Harbin or American flour. The Chinese have adopted this commodity into their everyday life, so that there are few people who do not eat flour in some form. This, of course, applies only to large towns, for the cost of cartage to outlying villages prevents wheat flour supplanting kaoliang or maize flour.

The importation of American flour into Manchuria during 1914 was 1,000,000 sacks (25,000 tons), or a decrease of 37 per cent as compared with the previous year. Though the latter half of the year was very favorable for the importation of the American product, yet it is understood that owing to the European war the flour trade of the United States was diverted from Manchuria to Europe. There is danger that if the war continues for a considerable length of time native flour from the mills in Manchuria may obtain such a foothold throughout this region as to preclude the reestablishment of the American flour trade.

Imports of American Kerosene—Demand for Watches

Imports of American kerosene into Manchuria totaled 6,600,000 gallons in 1914 as against 15,180,000 gallons in 1913. However, owing to the unfavorable exchange and to partial failure of the cereal crops,which resulted in reducing the purchasing power of the masses, the consumers of oil in many instances found it cheaper to substitute native oils, with the result that the sales of American oil were less in 1914 than 1913 by 2,000,000 gallons.

Mention should be made of the rapidly increasing trade done in the cheaper grade of watches, chiefly of Swiss, French, or American manufacture. Most people who can afford to, carry watches averaging in cost from $1.50 to $5 each. The higher-grade watches also find a good sale. Cheap Japanese wall clocks sell readily.

Bean Crop and Exports

The bean crop in 1914 was an average one, estimated at 1,150,000 tons for this district alone. Owing to the war the demand for beans and bean oil in Europe fell off and the price toward the end of the year dropped almost one-half. The beginning of 1915, however, finds cargoes again moving to Europe and prices about normal. The export of beans to Europe was 150,000 tons and to Japan and South China 80,000 tons each. There was a steady export of bean cake to Japan and south China, 500,000 and 200,000 tons, respectively; and of bean oil to Japan, America, Europe, and south China—15,000 tons to Japan and 10,000 tons each to America, Europe, and south China. Shipments of bean oil for the United States are made up at Dairen or Kobe, the Dairen cargoes often being transshipped at Kobe. Shipments of bean oil from Dairen to the United States increased from 2,962 tons in 1913 to 3,860 tons in 1914.

Extension of American Trade

It is believed that American commercial interests seeking to maintain and promote trade relations in Manchuria would find their prospects of success enhanced by cooperation with Japanese in south Manchuria, especially in noncompeting lines. Broadly speaking, from the commercial point of view, it seems more advisable for American merchants to work in concert with the Japanese than to compete with them in Manchuria. At the same time Chinese officials and merchants are anxious that American business houses establish distinctively American branches or agencies in this and other parts of Manchuria. They invite American capital to be used in developing commercial and industrial enterprises here and urge that direct transportation facilities with the United States be arranged.

In a number of lines American products are becoming better known and consequently gaining ground. The absence of reliable American firms, which fact compels American exporters to look to their natural competitors to sell their goods, is a leading obstacle to the development of American trade in this region. It is believed that the present is an especially favorable time for Americans to make a bid for a share of this market. American manufacturers, or a combination of them, whether exporters of competitive or noncompetitive articles, should establish a selling organization, with its own technical experts and salesmen, offer goods suited to the market, carry stocks at the principal distributing centers, and grant long credits. In some lines it is believed that such a system could be adopted with profit. Such a plan would embrace the methods adopted with beneficial results by such concerns as the Standard Oil Co. of New York and the Singer Sewing Machine Co. (both American); the British-American Tobacco Co. and the Mitsui Bussan Kaisha (Japanese). It will hardly be gainsaid that these concerns, whose trade in China has grown from small beginnings to enormous proportions, are eminently successful. It now only remains for American manufacturers to profit by their experience, gained after an expenditure of much time, labor, and money, and adopt the same methods in the firm confidence that profitable business will result.

Position of Japan in Manchurian Trade

While there is nothing in the known treaty provisions to prevent Americans from competing on equal terms with any other nation, yet in any comprehensive study of this question there are certain economic and political facts to be considered. Japan holds 70 per cent of the trade of South Manchuria, and in acquiring and still further promoting this trade it possesses the advantages of proximity to Manchuria, the residence therein of a large and increasing number of subjects, control of the leading transportation and banking facilities, and maintenance of its own postal, telegraph, and telephone services. Japan also has a number of large, reliable firms on the ground with extensive facilities for the distribution of goods, and in addition sends to Manchuria men with ability to cope with the peculiar local conditions. The Japanese gold yen, which is current throughout South Manchuria, is destined soon to become the chief circulating medium. With little or no competition the Japanese are unloading in Manchuria the products of their home labor, and favored by Government subsidies, special railway rates, preferential customs treatment, and exemption from internal taxation.

In addition to the special privileges and aids to trade enumerated above the Japanese are penetrating all parts of the country, locating in places not opened to international residence and trade.

It is believed that American goods, under similar conditions, would receive the same treatment on the Japanese railways, at the Chinese customs station at Antung, and, if distributed by our own merchants direct to the consumer, they would doubtless be exempt from inland levies. Moreover, if Americans so desired there is no valid reason why they, like the Japanese, should not trade at places in the interior.

Population of Mukden

According to the Japanese police census the population of Mukden on January 31, 1915, not including the Japanese railway town, amounted to 184,389, consisting of 181,756 Chinese, 2,236 Japanese, Koreans, and 179 foreigners. The Japanese population of the railway area in Mukden is 5,496. The same authority gave the total Japanese population of South Manchuria as follows: Kwantung leased territory, 48,596; South Manchuria Railway area (outside the leased territory), 32,974; under consular jurisdiction, 12,769; making a total of 94,339. Compared with the figures for 1913 and 1914, an increase of about 9,000 and 3,000, respectively, is shown. It is estimated that at the present rate of increase Japan's population in South Manchuria at the end of the present year will total 100,000. These figures, which are believed to be too small (Chinese and foreigners place the present number of Japanese in South Manchuria at 125,000), are exclusive of the military.

Manchuria is credited with 17 per cent of the total foreign trade of China. It is a land possessing many natural advantages, and its agricultural, mining, and industrial possibilities have been fully described.

The Towns of Hunchun and Lungchingtsun.

Hunchun is a small town situated between the Korean and Russian frontiers where these converge near the mouth of the Tumen River. Lungchingtsun is in the adjoining district of Chientao. Custom houses were opened at these places in 1910. Situated in a region which, though favored in respect of climate, is thinly populated and destitute of transport facilities, these towns are not likely to attain commercial importance in the immediate future. Their external relations are with Chosen and with Vladivostok via Novokievsk. The simple requirements of the inhabitants are satisfied chiefly by local productions. The fertile valleys are being gradually settled by numbers of Chinese and Korean farmers, the latter immigrating from northern Chosen. This region is reported to have valuable mineral deposits and large areas of timber, but owing to the difficulties of transportation, exploitation of these latent resources has been suspended. The construction of the projected railway from Kirin to Hoiryong, on the Chosen border, should result in opening up this district to trade from the west and from Chosen.

Imports at Hunchun and Lungchingtsun.

The value of the imports through the Chinese Maritime Customs at the port of Hunchun for the past two years was as follows (the kaiduan (customs) tael having been converted at the rate of 73 cents for 1913 and 70 cents for 1914): Imports of foreign goods, $295,710 for 1913 and $295,833 for 1914; exports of native produce of local origin to foreign countries, $294,695 for 1913 and $165,341 for 1914.

At the port of Lungchingtsun, in the Chientao district, the foreign trade in 1914 was as follows: Imports of foreign goods, $354,778 in 1914 against $489,975 in 1913; exports of native goods of local origin for foreign countries, $41,070 in 1914 against $127,250 in 1913.

Opportunities in China

By H. T. Liang. An address before the Commercial Club of San Francisco.

It seems almost a paradox to say that China is at once poor and rich. Nevertheless, it is true. China is poor, very poor, so far as hard cash is concerned, but it is rich, perhaps one of the richest countries in the world, when we begin to realize its unlimited natural resources. The natural resources of China in number and in kind will speak volumes. However, I wish to speak not so much on the general question of mining in China as on mining in Hunan, which is one of the provinces of central China.

Hunan is dotted with mines of every description: gold, silver, lead, zinc, antimony, tin, copper, iron, quicksilver, and coal. The numerous streams and canals throughout the province offer good transportation facilities. My own family was among the first to take an active interest in mining, for it has been in the business in Hunan for over twenty years.

I long had in my mind the ambition of becoming a mining engineer, and so in 1904, I came to this country for the necessary training. In the meantime, the mining of antimony at home began to assume great proportions, so that technical assistance was very much needed. In 1906, I went to the Royal School of Mines in London, and specialized in mining. Afterward, I studied under Herrenschmidt in Paris, and gained much knowledge and experience from him. The right of operating his patented smelting process in China was purchased for 100,000 francs. In 1908, upon my return to China, I at once organized an antimony mining and smelting company in Changsha, and the business has since been attended with much success. Almost all of our antimony products are imported into your great country through the office of the Wah Chang Mining Co. in New York City.

In addition, we have been operating a few lead and tin mines in Hunan, the ores of which are excellent and are easily transported to market. Nevertheless, as we are still in the experimental stage, we have not worked on a large scale. Consequently, our progress seems slow. But we have not been idle. Plans for rapid expansion have been made, and the prospect of great success seems assured. As soon as conditions in our country are a little more settled, we shall secure larger investments and more men of technical knowledge and experience for the much desired expansion.

The richness of our mines cannot be gainsaid. Let me illustrate by describing to you the Hunan Government lead mine at Shui Kou Shan, of which I have been in charge for about a year. Modern methods and machinery are used only for ore-dressing and in transporting the ores. Old Chinese methods are still being employed in breaking the rocks and in driving the drifts. Despite this fact, the mine yields high-grade lead ore amounting to about 60,000 tons per year. When we have installed up-to-date mining machinery, in a year or two, the output each year will, doubtless, increase several times. The width of the veins is over twenty metres. Foreign mining experts that have visited the place have one and all remarked that they have not seen veins of similar width at any other place in the world. This represents just one mine in Hunan, and there are many more and richer mines in the province. I hope some of you may visit Hunan in the course of time, and I shall be glad to show you what we have in the way of natural resources.

Our commission is now touring through your great country to see the notable advance which you have achieved in industry and in commerce, to seek your advice and co-operation in more than one way, and also to learn your system, methods, and spirit in transacting business. While doing this I wish especially to investigate up-to-date mining machinery, some of which I hope to ship back to Hunan to improve and develop our mining enterprises. Further, I wish to have the privilege of conference with your leading mining men about the best mining technology, with a view to securing their best co-operation and assistance. I sincerely hope I shall have both opportunities and facilities of realizing these hopes.

The development of mining enterprise in America has been really phenomenal. It is true that your great country is rich in natural resources and you have a sufficient number of well-qualified men. But, in the early days there was one act from which your country reaped not a little benefit in developing your natural resources. That was your open invitation to capital and technical men from Europe, and they responded by coming to your country. China fully realizes the advantage of such a policy and has decided to follow your illustrious example. Already there are unmistakable indications that ere long foreign capital and foreign experts will be invited to help us in unearthing the natural resources that have been buried underground for so long.

I have made extensive trips especially through the provinces of Hunan and Yunnan and have found a number of mines which, if operated, will perhaps equal any rich mine in America. At the same time, I fully realize that without the co-operation of capitalists and mining experts from abroad, we can hardly hope to make such progress in mining as is desired and desirable. One of my great hopes in visiting America this time is to call your attention to the wonderful opportunities of mining in China to-day, and to urge that you do not allow them to slip. America sent invitations to financiers and mining experts in Europe and she has since profited by their response. To-day China sends similar invitations to financiers and mining experts in your great country, and hopes that you will respond by coming to share with us our natural resources. Such a response will be heartily welcome, and will prove, I am sure, not only a source of great financial gain to you and to us, but also an added factor to strengthen the cordial relationship already existing between the two countries.

HISTORIES OF PRINTING AND PAPER IN CHINA AND JAPAN

BY HENRY LEWIS BULLEN

All civilizations prior to Gutenberg's invention were restricted in area and influence, and unstable. Many were lost; some survived in a condition of arrested development. "The glory that was Greece and the grandeur that was Rome" were eclipsed in the superstition of the Dark Ages. Then Printing came to revive all that was lost and to establish step by step *one* civilization for all mankind in which there is no seed of decadence and no possibility of extinction. Had printing been invented in the time of Julius Cæsar there would have been no Dark Ages and the world would have been twenty centuries in advance of its present degree of civilization; but until the twelfth century of the Christian era any kind of printing was impracticable in Europe because of the absence of paper. Without paper there could be no printing. Our modern civilization is absolutely dependent on paper or an equally inexpensive substitute. The Greco-Roman civilization was dependent on papyrus. Without papyrus Aristotle, Plato, Euclid and all the civilizers of the great Pagan world would have remained mute and the world untaught. Without paper (in the absence of papyrus) Copernicus, Galileo, Newton, Columbus, Shakespeare and Gutenberg would have lived in obscurity and departed into oblivion.

The art of printing is as old as civilization. It began thousands of centuries ago with the inventor of writing, who was the first civilizer. Its history since the first inscription was made is nothing more than a succession of devices to minimize time and expense in duplicating inscriptions. Each forward step was adopted because it was labor-saving. At every stage the same initial problem confronted the inventors: where to get an inexpensive substance to *inscribe or print upon. That remains with* us a problem; where are we to get substances to make low-cost papers to meet the tremendously increasing demand? At one time the predecessors of the twentieth-century printer could find nothing better to inscribe upon than stones; then skins, leaves of trees, clay and vellum. When the use of papyrus began, civilization took a tremendous leap forward; when papyrus was denied to Europe and its cultivation neglected in Africa, civilization retrograded rapidly. The march of mankind backward to barbarism was arrested by the invention of an artificial substitute for the papyrus plant, and so similar that it was immediately given *the same name in Europe—Paper.* Had fate decreed that to one only among all men born of women the secret of papermaking would be imparted, that man's life would have been of more importance to the world than the lives of all the world heroes from Agamemnon to Bismarck. From the period of the cavemen the art we practice has been of first importance in determining the destinies of nations—it is the supreme art when measured by its benefits to mankind.

Reduced facsimile of earliest extant Chinese woodcut, one of several illustrations in the "Saving Grace of the Goddess Kwanyin," printed A.D. 1331: the impression produced by rubbing. The art at that time was evidently far from its infancy.

Paper was invented in China, and the invention of printing by the Chinese was a natural sequence. The Chinese were the first to print from movable types as well as from engraved blocks. Chinese moveable types did not get into general use because *they afforded no labor-saving or cost-*saving relief in competition with engraved blocks in a language which requires more than fifty thousand characters to complete a font. If China had been blessed with alphabetic instead of word characters, printing in China would have developed on the same lines as it did centuries after in Europe, and China would be in this century in the van of civilization and power. Contemporaneously with Egypt, Greece and Rome, the Chinese developed a civilization which in many important phases was superior. In the period of its progressiveness China excelled the Occidentals in its laws and in inventions and manufactures. It then entered into a long period of mental trance similar to that which Europe endured in the Middle Ages; but the medievalism of China was much more enlightened and humane, because it had printing, which Europe had not. China's medievalism was the result of the limitation of the use of printing. Until quite recent years the Chinese proudly accepted the wisdom of Confucius (B.C. 551-478) as the finality of learning, and consequently its formative literature ceased. To reprint and comment on the works of Confucius was logically the whole duty of scholars and printers: thinkers out of the orthodox circle were deprived of their occupation by the all-wise Confucius. In this respect the results were in the main less disastrous than the same view of the Mahometans concerning the Koran, or of the early monks and the Bible, the Hebrews and the Septuagint, or the Buddhists and the Tripitaka. It is not the sum of wisdom but the liberty to add to it which makes for progress, and of that liberty free printing is the sword and shield.

It is not known when paper was invented. It was in use in China several centuries before the Christian era, and in the far East it is still made in remote interior villages by the same method that was used in the beginning, and probably from the same materials. It is quite probable that it was first made for other purposes than writing, as a substitute for cloth, etc. I recently received from the Shan country, on the borders of China and Burma, an excellent soft, exceedingly strong sample of paper well adapted for printing, although not made for the latter purpose. Mr. F. D. Phinney, superintendent of the Baptist Mission Press, Rangoon, the donor, describes the process thus:

"The bark of a certain wild mulberry tree is gathered, cut into small pieces and boiled for a few hours in an open kettle with lye bleached from wood ashes. The fibers are thus loosened and it is easy to pick over the softened bark, throw aside all knots and bad portions, and then to work and beat out the good fiber on any convenient stone near a running stream. The beaten fiber is then made up into balls, each containing fiber enough to make one sheet of paper about 22 by 28 inches. The mold is a wooden frame, with a cloth bottom, like a sieve. This is let down half its depth into the stream and so half-filled with water. A ball of fiber is put in, stirred about in the water with the hand and allowed to settle on the cloth as the frame is lifted out of the water. When partially dry the sheet of paper is separated from the cloth of the mold, and when dried is ready for sale or use. This paper so prepared has many uses, the covering of umbrellas among them." (Sun umbrellas, I suppose.) The sheet has a deckle edge, of course.

Such, doubtless, was also the primitive method of paper-making in "far Cathay" several centuries before Europe enjoyed the use of paper, improved upon from time to time, until the better papers of China and Japan reached a perfection not excelled in Europe at any period. There is no authentic record of the manufacture of paper in Europe until the twelfth century. It came into use slowly and surviving earlier specimens are crude, that being the reason probably why in the thirteenth century it was in some countries prohibited to use paper for important legal documents. However, the course of events was the same in Europe as in China. Following paper came the block-books and broad-sides, the earliest survivor of which is dated 1423. European block-books, like those of China, were printed on one side, because the paper had to be thin and absorbent to permit an impression by rubbing, but they lack the fine workmanship of contemporaneous Chinese block-books. In the fifteenth century China was more civilized than Europe and more advanced in arts and manufactures, except architecture, and its superiority was due primarily to low-cost paper and printing.

It is not known when printing was invented in China. The earliest reference is in an edict of the sixth century ordering the printing of the classical books from engraved blocks. From China the art went to Corea and from there to Japan, in which country the earliest surviving example is of the middle of the eighth century. The earliest Japanese printed book of which any record exists is dated in 1172. The earlier Chinese and Japanese books now in existence were made in precisely the same manner in which very beautiful books and pictures in colors are produced in those countries in the present day, although block-printing will soon be a lost art there. At all times these block-books were cheap and widely circulated. Before our method of printing was introduced in China, three or four volume works, in cases, octavo size, the whole about one and a half inches thick, were regularly sold for about fifty cents. By the rubbing method of impression a skilled workman averaged two thousand impressions per day. Of an octavo book he would print two pages at one time.

It was in the year A.D. 1041 that Pi-Ching invented a method of printing with movable types. His types were made of porcelain, the height about twelve-point. Chinese word-characters are arranged in columns of single-word characters. Pi-Ching constructed iron bases of the size of the page required; these he covered with a fusible mastic; on the bases he placed a mortised frame consisting of the border-rules and column-rules the same height as his types; he then inserted the types in the mortises, between the column-rules. When all were in position the whole was gently heated and brought to an even height in the mastic by pressure of a wooden planer. When the mastic cooled, the types and border remained firmly glued to the base and the page was ready to print by the rubbing process. The types were released by softening the mastic by heat. This was a practicable method, but it was not used after the death of Pi-Ching because it developed that an expert engraver could average as many pages per day as could be set with individual types. Had Pi-Ching gone a step further and substituted printing by pressure of a platen or cylinder for pressure by rubbing, he would have deprived Gutenberg of his seat in the temple of fame, in which event doubtless he would have substituted some metal for his porcelain. Gutenberg's was a double invention; movable types and a very important new method of getting the impression on the paper or vellum. It is probable that Gutenberg was led to the invention of a press by the impossibility of rubbing the impression on vellum or on thick paper, for in his time there was no thin absorbent paper in Europe. His was also a cost-saving invention, in that he was the first printer who could use both sides of the paper. Pi-Ching's great handicap was the number of characters required in his font. In the Typographic Library and Museum there is a specimen-book of a complete font of Chinese on eighteen-point body, cast in 1840, in Paris, for the Chinese government. It has 42,718 characters. While Pi-Ching was journeying from character No. 1 to character No. 42,718, the wood engraver was able to cut his character, and he saved the make-up and the distribution. The problems of printing a thousand years ago were not dissimilar to those of the present time, and we should remember always that the printer then reasoned in the same way and as clearly as the printer of to-day. They had intelligence equal to ours, but they lacked centuries of experience which guides us.

Motogi Nagahisa, who introduced the European method of printing and typecasting into Japan, establishing printing-plants in several cities. The Japanese derived their knowledge of the Western civilization chiefly from the translation issued from these plants. Motogi stood in this relation to the progress of Japan as Aldus Manutius stood toward the Renaissance in Europe. Both uncovered a hidden treasure with which a new civilization was erected.

There are in existence Corean books of the early fifteenth century, of dates before Gutenberg's invention, which were evidently printed with movable types. There is in the Typographic Library and Museum a copy of "Azumakagami," Vol. VII (one of the "Kamakura Chronicles," Vols. I-LII, A.D. 1180-1266), printed in Japan in the third month, tenth Keicho (March, 1605), which was presented by the Hon. Hatsutaro Koyama, Managing Director, Government Printing Office, who vouches that "this is the very first book printed in Japan from copper and wooden types." These types were engraved, not cast, and this applies also to the Corean types. That "Azumakagami" was printed from movable types is perceptible at a glance. The border rules show the mitered corners. The most-used word-characters would be in copper, the least-used in wood. We know it is impossible to maintain small engraved wooden characters at an equal height, hence an irregularity of impression not found in the block-books. These engraved types, and also the types cast in China in the reign of K'ang-hsi (1662-1723) afforded few if any advantages as long as the impressions were taken by rubbing, and did not hold their place against the engraved blocks. It was impossible to print well by rubbing when the forms were composed of characters of unequal heights. K'ang-hsi used his font to print a complete edition of the Chinese classics, said to run to six thousand volumes. As all Chinese books were stitched through the back and were rarely one inch in thickness this output was possible, especially as one of the works was an encyclopedia of several hundred volumes. In all the accounts of this transaction the types are said to be "cast copper," which K'ang-hsi's grandson is alleged to have melted (about 1740) to furnish metal for copper currency. Nothing is more difficult to cast than copper type, and I venture to believe that either the types were not copper or were not cast. The difficulties of casting in copper and the inferiority of the result warrant disbelief of this much-quoted statement; besides the work was done by Europeans versed in the easier and more effective use of type-metal.

Pictorial block-printing in China and Japan developed into a fine art, especially in the use of colors. The earliest pictorial wood engravings in existence are a Japanese woodcut of 1325 and a Chinese woodcut of 1331, both dated, and both the work of practiced draftsmen and cutters. There is in Shibamata an engraved block crudely done attributed to a priest who lived 1222-1282. The earliest European pictorial wood engraving is of 1423, immature in drawing and cutting. Japanese block engravings are printed in many colors in perfect register, although for such printing the silk or paper is laid by hand to marks on the inked block. To this manual skill there is added the color sense with which the printer applies the color on each block with a brush in gradations of tones. Many masters of this art appeared from time to time and their works are now as much sought after and their value appraised as highly as those of the early masters of engraving in Europe, such as Duerer and Rembrandt.

Europe's first knowledge of Chinese and Japanese word characters was derived in the sixteenth century from Jesuit missionaries. The first European book containing Chinese characters is the Jesuit relation "Historia de las Cosas de la China," by Gonzalez de Mendoca, Rome, 1585, and the first to contain Japanese characters is "Rerum a Societata Jesu in oriente gestarum volumen.....de Iaponicis rebus ad annum usque, 1565," by Emanuel Acosta, Naples, 1573. Both these works are in the Typographic Library and Museum.

Within the last half century the Chinese and Japanese have successfully adopted Occidental methods of printing. The earliest Occidental printing plant was that of Roman Catholic missionaries in Macao, China, 1590. It did not continue long. China owes the introduction of Occidental printing to the missionary societies of Great Britain and America. The first of these was sent from Boston to Canton by the American Board of Foreign Missions in 1831; the next was that of the American Presbyterian Mission, Shanghai, 1844. At various times mission printing-plants were also operated in Peking, Hongkong, Foochow, Ningpo, Swatow, Hankow, Kiukiang, Taichow, Hainan, and Moukden. In these plants a great number of Chinese learned to print. They also learned English. Some of them established printing-plants of their own, and from them are issued translations of Occidental literature which are eagerly read by the Chinese. Some of these plants are of great size. It is largely due to the work of these Chinese printers, who like the earlier printers of Europe are also editors, translators, and publishers, that China is now rapidly emerging from medievalism into a progressive civilization. The Chinese having seen the light of western civilization in books printed in their own language, are insatiately demanding more light. The greatest missionary is the printer.

Both China and Japan are looking forward to the substitution of alphabetic characters for their hampering ideographs. Japan has already officially decided to use the Roman characters (so far as they go) to express its coming reformed written language. It is to be hoped that China, Corea and Japan will adopt the same alphabet, and in the light of experience and the knowledge of the defects of the Roman alphabet, it may be expected that the Japanese alphabet will excel all others in its phonetic comprehensiveness. This reform will undoubtedly accelerate the progress of the peoples of the Far East.

As is well known, Japan was able to exclude missionaries and all Occidental ideas until the early sixties of the last century. The introduction of Occidental printing was the work of the Japanese themselves. It is contrary to the habit of that nation to be led. How slow the Japanese were in succumbing to Western ideas is indicated by the fact that the ancient kingdom's first newspaper did not appear until 1865. *Naigai Shimpo* (Domestic and Foreign News), printed from engraved wooden blocks, size of each 5½ by 3½ inches. Now Japan has hundreds of newspapers, dailies, weeklies, colored supplements, comics—everything we submit to or enjoy in America.

Occidental printing was introduced into Japan by Motogi Nagahisa. "It was Motogi's belief that until the printer's art in Japan stood on the same level with that of the Occident, our civilization would fall short of that of Europe. How wise and far-sighted he was!" So wrote one of his countrymen who has been influential in the Occidentalization of Japan. Motogi, born 1824, in Nagasaki, came of a knightly family of hereditary official interpreters. He early learned to read Dutch books brought to Japan by Dutch merchants, who alone among Europeans of that time had acquired consent to trade with Japan. He was as much impressed with the printing as with the contents, and by study, not having seen any cast types, he managed to cast Japanese characters in lead, and actually printed a book with them in 1851-2. In 1853 Motogi acted as interpreter to the Russian embassy whose ship was wrecked by a tidal wave. The Russians were therefore obliged to build a schooner for their return voyage, the details of which construction Motogi attentively studied, which led him to observe closely the European vessels then beginning to visit Japan, so that in 1855 he was able to make a working model of a steamship. In the same year he was imprisoned for planning to publish an English-Japanese dictionary. His imprisonment continued three years. When set free he again applied himself to typecasting and printing. His first punches were of buffalo-horn struck in lead; from these he proceeded to steel punches struck into copper matrices; but having no instruction in the niceties of the art, his types were exceedingly inaccurate and the printing even worse, as he had no ink other than Indian ink. Thoroughly disheartened he turned to steamships, buying two small ones, and starting an iron foundry. He thus became the first steam navigator and the first builder of iron bridges in Japan. In 1869 he established a school in which Chinese and other foreign languages were taught. Learning that a mission press was in operation in Shanghai, in which types were cast, Motogi sent a man there to learn typecasting, but the man did not succeed. Motogi then bought types and attempted to use them as models for casting Japanese characters, but again he failed. He then secured the services of an American named Gunberg, with whose aid the first Japanese printing-plant was established and types were cast. In course of time the owners of this enterprise divided into two companies. One company established typefoundries in Tokyo, Nagasaki, and Osaka. The other company started the Kwankoryo printing establishment which is now the Insatsu Kyoku or Imperial Printing Bureau. In the course of time Motogi established printing-plants in several cities. A long time elapsed before they were profitable, and Motogi paid the deficits to the extent of more than half of his fortune. This patriotic man died in 1875, at the age of fifty-two, before which time he had the satisfaction of seeing the printers of Japan well employed by their fellow countrymen, who had been induced by the output of these plants to enter upon a new era of national life. There is a great deal of printing done in Japan in European as well as Oriental languages, and much of it ranks in quality with our good printing.

A Japanese printer and his outfit, with which beautiful books and masterly color-prints have been produced for at least fourteen centuries. Gutenberg's art is in its fifth century.

Reduced reproduction of a Japanese print by the artist Hokusai (1760-1849), the original in four colors, illustrating the printing of a picture in four colors. Two printers are applying the colors with brushes, a woman has the paper ready to lay on the first block, and a boy is mixing colors. Hokusai was a book illustrator, and the example does not display his full power. The printing would be hurried according to the size of edition and the need of haste. This reproduction is from the original in the Typographic Library and Museum, Jersey City, which also furnishes the other illustrations for this article.

There are not many books relating to the topic of discussion. We must rely on the encyclopedias to a great extent for casual references. Authoritative history is found in Ernest Satow's contributions to the "Transactions" of the Asiatic Society "On the History of Printing in Japan" (1881) and "Further Notes on Movable Types in Korea and Early Japanese Printed Books" (1882), Anderson's "Japanese Wood Engravings," London, 1895, 8vo, pp. 80 (worth about $3), is reliable and interesting, and the process of block-printing is described in minute detail in Tokuno's "Japanese Wood-Cutting and Wood-Cut Printing," Washington, 1894, 8vo, pp. 24 and thirteen plates, worth about $2. "The Mission Press in China," Shanghai, 1895, 12mo, illus., pp. 106 (about $2) and "A Mission Press Sexgenary, a sketch of sixty years of the American Presbyterian Mission Press, 1844-1904," Shanghai, 1904, 12mo, illus., pp. 32 (about $1), are reliable and interesting. Withal this field awaits a more complete history.

There is no comprehensive history of Paper in English. Such a book would be valuable. It is curious that while the subject of paper-marks has been dealt with comprehensively and voluminously the paper has been neglected. The J. W. Butler Paper Company publish "The Story of Paper-Making, an account of paper-making from its earliest known record down to the present time," Chicago, 1901, 12mo, illus., pp. 136 (about $1 50), an excellent short history. Perhaps the best book on the subject in English is "Paper and Paper Making, Ancient and Modern," by Richard Herring. London, third edition, 1863, 8vo, illus., pp 132 (about $2). "The Paper Trade, a descriptive and historical survey of the paper trade from the commencement of the nineteenth century," by A. Dykes Spicer, London, 1907, 8vo, pp. 282, with diagrams, is historical, philosophic, technical and interesting. A curiosity of the literature of paper is "Historical Account of the Substances which have been used to Describe Events and to Convey Ideas from the earliest date to the Invention of Paper," by Matthias Koops, London, 1800, 8vo, pp. 91, which is "printed on the first useful paper manufactured solely from straw," and partly "upon paper made from wood alone, without any intermixture of rags, waste paper, bark-straw or any other vegetable substance" (about $4). Necessity is the mother, etc. In 1800 Napoleon I. had Europe tied up as tight as it is now in 1914. Great Britain could trade nowhere in Europe, and its supply of rags for paper was cut off. Koops, the first to make wood-pulp paper, was induced to experiment to get substitutes for rags; this book is the result. Last but not least, we have the work of that eminent, scholarly printer of Albany, New York, Joel Munsell, "Chronology of the origin and progress of Paper and Paper-Making," Albany, 1876, fifth edition 16mo, pp. 263 (about $3.50), which is indispensable to the student and entertaining to all in the vast army which depends upon paper for its daily bread, as well as to the illimitable army which "doth not live by bread only, but by every word that proceedeth out of the mouth of the Lord."

New Turpentine Factory in India.

A new turpentine factory is to be erected at Jallo near Lahore, in the Punjab, Northwest India. This factory is to take the place of the Punjab Resin Factory at Shahdara, which was badly damaged by a recent flood. While machinery bought some time ago, to be used in the old establishment, is to be used, it would be advisable for American manufacturers of suitable machinery and accessories to address the management of the company. There probably will be an improvement in the turpentine industry of northern India in the near future.

ENGINEERING, FINANCIAL AND INDUSTRIAL NEWS

RAILWAYS

1000 Mile Track in Korea.—In Seoul, the completion of one thousand miles of railway track in Korea was celebrated recently by a ceremony held in Kyongpok Palace grounds in the presence of Prince Kan-in of Japan. It was attended by some 2,000 guests. According to the "Seoul Press" Dr. Ohya, Director of the Railway Bureau, made an interesting speech on the work of which he is in charge. He said the Seoul-Chemulpo line was the very beginning of the railway system and was first undertaken by Americans but later purchased by Japanese. In September, 1899, the section between Chemulpo and Noyangjin was completed and opened to traffic. During July, 1900, the remaining section from Noyangjin to West Gate Station was finished. In the meantime the Seoul-Fusan Railway Company came into existence, and in August, 1901, the Company started the construction of a railway between Seoul and Fusan from both termini. The property and interests of the Company were purchased by the Government two years later, but the Company continued carrying on the construction work under commission from the Government until it was completed in November, 1904. The total mileage of the line was 267 and it was opened to business in January, 1905.

On the outbreak of the Russo-Japanese War in February, 1904, Japan, under pressure of military necessity, at once started the building of a line between Seoul and New Wiju and the new line together with another military line from Samrangin to Masan was completed. In 1906 all the railways were transferred to the management of the Railway Bureau of the Residency-General. Since then railway building has been continuous and the Pyongyang-Chinnampo Line and iron bridge over the Yalu soon were completed. On the completion of the Antung-Mukden Railway connexion was effected between the railway system in Korea and Manchuria and the trunk railway in Korea became the shortest route from Europe and East Asia, the journey being much facilitated by the new harbour works at Fusan.

Among railway works undertaken since the annexation was the Hanam Line. Begun in October, 1910, and its trunk and branch lines, totalling 175 miles, were finished in January, 1914. No less important a work was the Seoul-Wonsan Line connecting the trunk railway with the eastern coast of the peninsula. It measured 138 miles in length and was finished in August, 1914. With a view to having a railway through South and north Hamkyong Provinces, a plan had been laid down for two local lines, one from Wonsan to Yanheung and the other from Chongjin to Hoiryong, and work was commenced last October, with the result that the section from Wonsan to Munchon (a distance of twelve miles) was completed on August 1 last. The total mileage of Korean railways has thus reached 1,006.

Count Terauchi, Governor-General, delivered an address in which he said he was determined to carry on the work just started as rapidly as finances of the Administration would allow, and effect a junction between with the Kirin-Changchun Railway. Engineering work in those regions was very difficult, for the region was hilly and several years would be required before the completion of the railway. The construction of various branch lines had to go on parallel with economical progress of the several localities concerned, and the day of completion of all of them he said would be very remote.

Japan Railway Board Wants Y40,000,000.—The Imperial Railway Board has been framing its own special budget to be introduced in the Diet this fall. A statement made by an official of the department, is that the whole expenditure for the second year of the seven year plan of improvement started last year, will be 40,000,000 yen. Of this amount, 10,500,000 yen will be devoted to construction work, and 29,500,000 yen for repair work. As for revenue, the board estimates that traffic receipts will amount to 121,700,000 yen, and miscellaneous receipts to about 2,500,000 yen, totalling 124,200,000 yen. Expenditures will amount to 106,700,000 yen, the balance of 17,500,000 yen, to constitute a net profit of the board. To this profit will be added 20,000,000 yen from the redemption fund. Then there will be about 2,500,000 yen which can be transferred for the use of the board making in all 40,000,000 yen.

Lines will be built as follows: 25 miles, between Hamada and Masuda; 88 miles, between Miyazaki and Saiki; 34 miles between Yamada and Suzaki; 19 miles between Yamagata and Sazawa; 87 miles between Otoineful and Wakanai.

Tsitsihar-Aigun Railway.—The construction of the long talked-of Tsitsihar-Aigun railway has been decided to be taken in hand early next spring as reported after a consultation of Military Commissioner Chu of Heilungkiang with the Chinese Government.

Shanghai Tramway Receipts.—The following is the traffic return of the Shanghai Tramways (Foreign Settlement) for September, 1915, and for nine months ended 30th September, 1915, with figures for the corresponding periods last year:—

	1915.	1914.
Gross Receipts	$120,421.54	$105,173.36
Loss by currency depreciation.	32,595.04	26,387.08
Effective Receipts ...	$87,462.50	$78,786.28
Percentage of loss by currency depreciation	29.00	26.87
Car Miles run	280,673	261,170
Passengers carried ...	5,452.242	4,671,457

	9 months ended 30th Sept., 1915.	9 months ended 30th Sept., 1914.
Gross Receipts	$980,259.54	$968,756.64
Loss by currency depreciation	263,531.04	229,671.20
Effective Receipts ...	$716,728.50	$739,085.44
Percentage of loss by currency depreciation	28.61	25.16
Car Miles run	2,481,568	2,489,371
Passengers carried ...	43,331,734	41,195,133

S. M. R. Traffic Returns.—The South Manchuria Railway Traffic Returns for the first decade of October give a daily average of Y42,803.63, being a decrease by Y6,314.69 from the corresponding period of last year. This decrease was due mainly to the backwardness of the new produce season. The total receipts from April to October 10th were Y10,471,932 and the net increase over the corresponding period of last year Y1,179,838.

The South Manchuria Railway Co. has received from the Japanese Government permission to double the track on the Suchiatun-Mukden section, a distance of about 10 miles, of the main line extending from Dairen to Chengchun. This work, which is merely an extension, as the line from Dairen to Suchiatun, 2,365 miles, was double-tracked several years ago, will consume over four years. The construction of a railway bridge for the second track over the Hun River is already in progress.

New Indian Railway Project.—The Mayurbhanj Railway Project is an undertaking to acquire the existing Mayurbhanj (Light) Railway and to provide funds for the extension of this line to Talbund. The length of the existing Railway is 32.41 miles of 2 feet 6-inch gauge connecting Rupsa on the Bengal-Nagpur Railway main line with Baripada, the capital of Mayurbhanj State. The length of the proposed extension from Baripada to Talbund is 38.69 miles, to make with the existing Railway a total length of 72 miles on the 2 feet 6-inch gauge.

The proposed extension will run mostly through low forest. An irrigation scheme is nearing completion, and already practically irrigates 10,964 acres. This should be completed during 1915. A further scheme is under contemplation which with the area already irrigated should command above 600 square miles; it is expected that out of this new area 180 square miles will be irrigated.

There are extensive forests beyond Baripada, the present terminus of the line, which have hitherto been practically unexploited owing to the prohibitive cost of carting.

One of the main objects of the extension is to provide an outlet for the large supply of excellent timber for sleepers and building purposes which the Simlipahar forest will supply. These forests are capable of producing 500,000 cubic feet of timber annually.

The extension will also render marketable other forest produce such as myrobalans, etc., which are not exported now, owing to the prohibitive cost of cartage.

Ninguta-Mulin Railway.—The question of laying a railway connecting the walled town of Ninguta with a point on the Chinese Eastern Railway had been pending for some time past. At the end of August the Chinese Guild made an attempt to bring the issue to a head. The question of choosing between the Ninguta-Hailin route and the other one passing through Mulin via Mutan Valley was finally decided in the latter's favour, principally from the consideration of lighter expenses required. The branch of the Frontier Development Bank opened thereat recently is said to have agreed to advance a loan of 100,000 roubles to the Chinese Guild for employment for the railway construction.

Siamese Railway Construction.—The budget estimates for Siam for the fiscal twelvemonth allocate $2,952,600 gold for further work on the extension of the Southern Railway, originally financed out of a loan of about $20,000,000, arranged with the British Federated Malay States. At first the intention was to construct a line running from Petchaburi southward down the east coast of the Siamese portion of the Malay Peninsula, to connect with a British line on the eastern Patani-Kelantan boundary. Last year, however, the two Governments agreed to make a further connection on the Kedah border—a British Malay State on the west side of the Peninsula.

With reference to the call for tenders by the Siamese Royal Railway Department (broad gauge) for the supply and delivery of bogies and frames for rolling stock, the Acting British Consul-General at Bangkok now reports that the contract in question has been awarded to an American firm.

SHIPPING

New Chinese Shipping Line.—According to a San Francisco Special to the Manila Bulletin under date of October 12, the China Mail, a new steamship company, has been organized with a capital of $10,000,000, to engage in the trans-Pacific passenger and freight carrying trade. The organizers are largely Chinese, though it is said that there is some American capital in the enterprise and it was stated in San Francisco by Dr. Wellington Koo, Minister to Mexico, that Chinese banking interests were solidly behind the new company.

The China Mail has already purchased the former Pacific Mail liner China from the Atlantic Transport Company, and this steamer will leave San Francisco on Saturday, October 16, calling at Honolulu, Nagasaki, Manila, and China ports, as previous to the dissolution of the Pacific Mail. Negotiations have already been begun by the new company for the purchase of other steamers to be placed on the same run, and for the securing of a subsidy from the Chinese government. The avowed purpose of the new line is to take the place of the Pacific Mail on the Pacific Ocean.

The China is a vessel of 10.200 tons, she left Manila in September on her last trip as a Pacific Mail boat, on which line she has been for more than thirty years, making nearly 250 voyages.

China's River Navy.—The Chinese naval authorities have presented a scheme to build 20 or 30 shallow draft warships which will be distributed at important points on the coast and rivers. The President is said to have sanctioned the scheme.

New Tsingtau-Shanghai Service.—The South Manchuria Railway Company has decided to open a regular navigation service between Tsingtau and Shanghai beginning in October. The Hakushin Maru, of 2,000 tons, will be placed in this new service and will run once a week between the two ports.

New Line to U. S.—By the withdrawal of the Pacific Mail liners and the s.s. Minnesota from the trans-Pacific trade what little there was to represent the American Merchant Marine almost completely disappeared, leaving the American flag practically unrepresented, but still further, entirely upset shipping to the Pacific coast of America, as remaining carriers were already booked up in advance. Many shippers were very badly embarrassed. But Shanghai shippers are not to continue to suffer curtailment of business with America because of lack of ships, as a new trans-Pacific service is just being started by Messrs. Norton and Harrison Co. of Manila, whose first steamer, the s.s. Rio Pasig (American flag) loaded here in October for San Francisco and which undoubtedly will be followed by other boats at as frequent intervals as shipping requires and suitable boats can be secured. Mr. L. Everett, local agent for Messrs. Norton and Harrison Co., says that inquiry for space by future sailings indicates clearly that Shanghai shippers are ready to support the new line.

Messrs. Norton and Harrison Co. are a Manila firm of high standing, commercially. One of their lines is the importing of Oregon pine lumber from the Pacific Coast to Manila and it is presumed that the ships will be used for their own return cargoes of lumber.

Magnetic Survey of China Coast.—Dr. Charles K. Edmunds, President of Canton Christian College, a specialist in physics who is assisting the Carnegie Foundation in making a magnetic survey of Eastern Asia, reports that the preliminary survey as undertaken should be completed by next May. When this is done there will be very few points in China more than 150 miles distant from a station where magnetic conditions have been investigated. Dr. Edmunds states that at each point where investigations are made, there are three things to be determined; the angle of variation of the magnetic needle from due North, the dip of the needle from the horizontal, and the intensity of the magnetic force. The result of the survey will make possible a more accurate use of the compass on the sea by those engaged in navigation, and in addition the help afforded to mining, railroad and other engineers on land will be of considerable importance. Dr. Edmunds reports that the Chinese government has been sympathetic toward this scientific work, and particularly the officials of the Maritime Customs Service have not only been sympathetic, but have rendered substantial aid in many ways.

New Java-Frisco Service.—The Java-China-Japan steamship line has planned to open a monthly freight service between Java and San Francisco, through Manila and Hongkong. The main office in Amsterdam has telegraphed to the Chamber of Commerce in San Francisco requesting assistance in securing railway connections. They replied by telegram that details would be arranged after representatives of the company reached San Francisco. It is understood that efforts will be made to induce the line to include Shanghai in its list of ports.

T. K. K. from Dairen to Frisco.—It is now announced that the Toyo Kisen Kaisha will open a freight service between San Francisco and Dairen shortly and all preparations for starting this line are reported to have been completed. For a time only one steamship will be run on this new line, and the company has contracted to charter the Shinsei Maru, 6.200 tons, which will leave Yokohama in December. The Shinsei Maru was sold to Mr. Naruse of Kobe by the Kishimoto Steamship Company for 270,000 yen in March. She was again recently sold to her present owner by the Kishimoto Steamship Company for 570,000 yen.

Panama Reopening Indefinite.—It has been officially announced that owing to continued movements and sliding of material, it is impossible to predict any approximate date for the re-opening of the Panama Canal. The average loading of the 983 laden vessels which passed through the Panama Canal during the fiscal year was 5,055.7 tons, and the average for all vessels, laden in ballast, in that time was 4,567.8 tons, according to an analysis published by the Canal Record. The number of vessels which passed through the canal carrying 10,000 or more tons of cargo was 41. The largest cargo was 12,040 tons, consisting of sugar and general produce, carried by the s.s. Alaskan. Of the 41 vessels, 28 ships, or 68 per cent., were in the service of the American-Hawaiian Steamship Company, operating in the United States coastwise trade.

Japan-New Zealand Line.—For the time being negotiations between Kobe steamship owners and oversea commercial men for a direct line of steamers between Japan and New Zealand, have been going slowly owing to the difficulty of return cargoes from New Zealand to Japan. The present idea is to have three steamers of between 4,000 and 5,000 tons. The chief aim is to get the line started for the coming wool season in New Zealand and to catch the next summer's trade for Japanese goods in New Zealand. Negotiations are being made to charter for the service the s.s. Keizan Maru, 3,159 tons, Daiten Maru, 4,555 tons, and Ataka Maru, 3,758 tons, the two latter being registered at Dairen.

U. S. Shipping Increased.—More ships are now flying the American flag in the foreign trade than at any other time since 1863, and the United States is pressing close upon France and Norway as a maritime nation. For the year ended June 30, there were registered in the foreign trade 2,768 ships, totalling 1,813,775 gross tons, an increase of 363 ships and 737,623 tons for the year. This is about triple the increase in registered tonnage for any previous year in American history, and the registered tonnage is now much greater than at any time since 1863, when 2,026,114 gross tons in foreign trade flew the U. S. flag. The steam tonnage now amounts to 1,273,067 gross tons, while in 1863 it was but 133,215 tons. The increase from the Ship registry Act of August, 1914, to June 18, 1915, was so rapid that tonnage under the American flag now employed in foreign trade is nearly equal to such tonnage under the French or Norwegian flags.

Returns filed with United States Bureau of Navigation, Department of Commerce, show that at the beginning of the current fiscal year, July 1, 1915, the shipyards of the United States had under construction or under contract 65 steel merchant vessels of 296,426 gross tons, the largest amount of work at the corresponding date since July 1, 1907, when 134 steel merchant vessels of 403,473 gross tons were under construction or contract. The steel merchant tonnage now under construction on the seaboard, however, 60 vessels of 288,701 gross tons, is greater than in any previous year, the nearest approach being 63 vessels of 273,865 tons in July, 1901. Of the vessels now building, 21 are bulk oil carriers of 154,056 gross tons, six colliers of 25,475 gross tons, and five passenger steamers of 17,000 tons, the remainder being cargo boats.

FINANCE

China's Salt Tax Surplus.—The Quintuple Group, subject to certain conditions, has handed over to the Chinese Government £550,000, being the balance of money set aside for the reorganization of the Salt Gabelle, which Sir Richard Dane says he does not require for that purpose. The amount actually released was £750,000, but the Banks deducted certain loan charges amounting to £200,000.

Plan New Bank for Manchuria.—Wang Cheng-yao and other merchants have raised a large capital to establish an industrial bank called Fohsin Colonization Bank in the Three Eastern Provinces to develop their natural resources. The object of the Bank is to utilize its capital of $5,000,000 for agriculture, afforestation, irrigation, reclamation, colonization, mining and other industrial enterprises. The Head Office will be in Peking, and branches will be established in various localities on the frontier. The project has been registered in the Ministry of Finance, and the petitioners have been instructed to apply again for formal recognition and registration as soon as one fourth of the proceeds of the fixed capital has been collected from the shareholders.

Sino-Japanese Bank Project.—The proposed capital of the projected Sino-Japanese banking enterprise is dwindling. Two months ago it was set at Y50,000,000 to be subscribed in equal amounts by the two Governments. Later it was reduced to Y20,000,000 but now, according to Tokyo reports, the Japanese government is now showing the plan to those who are interested, with the view to collecting their ideas, so that a bill may be introduced in the coming regular session of the Diet. The contents of the government draft are as follows: Capital shall be 10,000.000 yen. The government shall guarantee the interest of 8 per cent. per annum. The bank shall be conducted jointly by the Japanese and the Chinese. The bank of Formosa and the Yokohama Specie Bank and other banks shall not join in the undertaking. It is understood that the Sino-Japanese bank is to be an independent institution, except that other banks interested may take shares in the proposed bank.

According to reports from Peking, appearing in the Japanese press, the Chinese are not in favor of the proposed Chino-Japanese bank. They say these plans incidentally disclose the Japanese ambition to conquer China economically.

The Chinese government is planning a Chinese colonization of parts of Mongolia, where the Japanese are supposed to be planning a colonization of their own. For this colony China expects to establish a branch of the Colonial Bank in Mongolia. Fifteen officials have been sent to Mongolia to make an inspection in connection with the plan.

Kiangsi Collects Half Million.—The province of Kiangsi has remitted to the Central Government $500,000 realized from the sale of revenue stamps. It is understood that more than twenty magistrates have been awarded decorations on account of their industry in the collection of the stamp tax.

Hawaii Japanese Remittances.—According to official figures the amount of money sent home from Japanese in Hawaii has been decreasing. In 1912, they sent to Japan either through the banks or postal money orders, Yen 5,600,000, in 1913, Yen 5,400,000 and in 1914, Yen 4,600,000. According to the report at the end of last year, the total population of Hawaii was 227,000, of whom 89,715 were Japanese.

Japan's Postal Savings.—During July, 11,303,156 yen in deposits in the government Postal Savings Bank were withdrawn and 15,137,791 yen added in new deposits. The amount of the deposits in the bank at the end of the month was 208,687,574 yen.

Japan's Finance Problems.—The deficit in the revenue for the current fiscal year has already amounted to over 10,000,000 yen, says Minister Taketomi of the Finance Department in a press interview, though the former Minister estimated it at 9,700,000 yen. It is chiefly due to the decrease in the revenue from all taxes, from stamps, and from Government-controlled undertakings. Although the revenue for the current financial year has been unsatisfactory, next year may witness a turn in favour of the national coffer. In spite of the European war, the Customs duties will increase with the improvement of financial conditions in this country. Therefore, the Minister asserts, there is no doubt that next year's revenue will cover the Budget which will be presented to the winter session of the Diet.

As for the naval expansion programme, Admiral Yashiro, ex-Minister of Navy, tendered the estimates for it to the Finance Department. It is not certain, however, whether Admiral Kato, the new Minister, will carry out the plan laid down by his predecessor. Presumably, the annual instalment will be more or less changed. On the other hand the estimated cost of the new works to be undertaken next year by other Departments amount to some 50,000,000 yen, a far larger sum than was anticipated. But, the Minister fears it will be reduced by a large amount in view of straitened resources.

The Imperial Railway Board must redeem next year loans to the amount of 30,000,000 yen in Britain, but the Treasury is too pressed for available funds to carry out the redemption. Therefore, the authorities are inclined to convert them into new bonds. Should the conversion be impossible amidst the war, the Government will issue short-term bonds at home and pay back the loans in Britain. In this connection, however, the public is requested to remember that the Government will never dare to float loans at home only to redeem national bonds abroad. The Commission for the re-adjustment of Government undertakings has made successful investigations of all the Departments and will shortly sit in final conference, when the decision will be given. It is understood that the Paper Manufacture Bureau and the Kyoto Printing Office in the Tobacco Monopoly Bureau have been thoroughly examined by the Commission.

Japan's Revenue Decreases.—According to an investigation of the Department of Finance, the Customs receipts for August amounted to 2,741,794 yen, showing a decrease of 1,770,000 yen on the corresponding month last year. The total receipts from April to August this year show a decrease of 10,490,109 yen.

Japan's Budget Increased.—The National Budget for the next fiscal year was roughly decided upon at a recent Cabinet council as follows:—The aggregate amount of the National Budget for the next fiscal year has been put at Y579,000,000, showing an increase of Y24,000,000 over that curtailed by the Department of Finance.

The principal items of the increased expenditures are Y5,900,000 being the first annual allotment for the naval replenishment appropriation of Y45,000,000 to extend over five years; Y3,250,000 being the first annual allotment for the proposed extension of the telephonic service costing Y16,000,000 to extend over five years; the proposed improvement of seed rice and wheat in quality costing Y85,000; the operation of the Factory Law costing Y98,000, etc. The proposed organization of a naval aerial corps, the proposed encouragement of the manufacture of dyestuffs, and the appropriation for the investigation of military balloons and motor-cars have been retained in modified forms. The proposed extension of the Government Steel Works at Edamitsu and the re-establishment of the sub-district courts have been wholly deleted. The appropriation for the Government operation of the petty insurance business has been included in the Supplementary Budget.

The appropriation of Y5,315,000 for the Imperial Coronation, the increase of the working capital of the Monopoly Bureau by Y3,000,000, the increase of the surplus fund by Y2,000,000, the advance of a loan of Y2,350,000 to the afflicted districts in Kagoshima Prefecture, the replenishment appropriation of Y12,000,000 for the construction of warships and torpedo boats, etc., have been left untouched.

The maximum amount of the issue of Exchequer bills for the next fiscal year has been fixed at Y50,000,000, the same as in the preceding fiscal year. The proposed increase of the reserve fund of the National Treasury from Y3,000,000 to Y8,000,000 has been pigeonholed.

Lower Interest in Yokohama.—Leading bankers in Yokohama held a meeting at the Yokohama Bankers' Club and decided to lower the interests in Yokohama following the example of the banks of Tokyo. The interest rate for fixed deposits for six months was lowered to 4 per cent. The new rates of interest are now in effect except those on special current deposits.

Tokyo Faces Deficit.—Mayor Okuda submitted to the Aldermanic Council on August 17 a plan for readjustment of municipal finances. The following is the outline: The loans raised by the civic electric bureau on account of electric lighting and electric railway business are 99,344.183 yen, the actual receipts being 92,196,101 yen. Of the loan a sum of 88,627,100 yen has been expended in the purchase of the tramway business and properties from the former Tokyo Railway Company, and various extensions leaving a balance of 3,568,999 yen. Writing off the estimated business expenditure including the expenditure required for the business extension postponed from the previous financial year there remains only 510,000 yen. This is the balance which can be expended in the next fiscal year.

The question is, with such a narrow margin of funds how can the municipality begin the annual redemption and payment of the municipal loan and interest amounting to 900,000 yen in principal only, from the next fiscal year.

The proceeds from electric business, both tramway and lighting, are insufficient. The net proceeds between 1910 and 1913 amounted to about 400,000 yen, but as a loss of about 280,000 yen was incurred the next year, there remains only 120,000 yen on hand. The result for the present year is anything but promising.

The only source that can be resorted to is the reserve intended to meet depreciation. This reserve, which stood at 610,000 yen at the end of 1914, is estimated to reach 750,000 yen in 1915 and 950,000 yen in 1916. Owing to lack of money the funds for the first redemption of the municipal debentures falling due next year must be appropriated from this surplus.

Iloilo Utilities to Increase Stock.—Requests for authority to issue additional amounts of stock within the limits already approved have been filed with the board of public utilities commissioners by the Iloilo Electric Company and the Iloilo Telephone and Telegraph Company. The Iloilo Electric Company asks authority for the issuance of P13,800 stock during 1914, and for an amount sufficient to bring the total to P20,000 par value. The receipts are to instal a new engine, switchboard, and pipes in the company's plant to take care of increased patronage. The telephone and Telegraph Company asks authority for the issuance of 500 more shares of its already authorized capital stock, the proceeds from the sale of the stock to be used in extending the system and making necessary improvements.

P. I. Auditor's Big Saving.—That the recent reorganization of the bureau of audits, under the direction of Insular Auditor Clifford H. French, has resulted in the accomplishment of the full work of that office in spite of a reduction affecting 40 per cent of the American and 20 per cent of the Filipino personnel of the bureau, and effected a saving to the insular government of P81,354 per annum, is the statement just made by Mr. French in an official report to the acting governor general. During the period from October 1, 1913, to May 1, 1915, the staff was reduced by 23 American employes and 37 Filipinos. The saving in salaries of Americans alone was P79,800 per annum, while that in those of the natives was only P1,554. This latter fact is accounted for by the promotions accorded a majority of the Filipinos retained in the service. It is understood that the reorganization of the bureau worked out by Mr. French last year, and as a result of which several of the departments were combined, enabled the required amount of work to be done with a greatly reduced staff.

India's Revenue Nearly Normal—Revenue collections of the Government of India, for the period from July 1 to December 31, 1914, as compared with the corresponding period of 1913, are given in the attached table, together with the principal sources from which such revenue was derived:

Sources of revenue.	1913	1914
Land revenue	$21,870,537	$22,768,893
Opium	2,956,398	3,280,508
Salt	7,451,584	8,714,928
Stamps	11,874,746	11,138,445
Excise	20,597,461	19,998,395
Customs	18,043,522	14,213,587
Assessed taxes ...	4,966,750	5,311,298
Forest	5,119,071	4,743,864
Tributes	671,577	615,126
Other heads	1,358,240	970,866
Interest	2,860,527	1,808,391
Post and telegraph	8,849,243	8,712,494
Receipts by civil department	3,398,764	3,491,226
Miscellaneous ...	1,279,889	1,610,088
Railways (gross)...	85,549,175	79,755,122
Irrigation	5,655,846	5,797,461
Other public works	584,953	561,107
Military receipts ...	3,277,100	5,186,715
Total revenue ...	206,365,383	198,778,514

No new forms of raising revenue have been adopted since July, 1914. The amount of rupee debt outstanding on July 1, 1914, was $472,647,782. The amount outstanding on January 1, 1915, was $488,361,386. The amount of sterling debt outstanding on July 1, 1914, was $861,685,640. The amount outstanding on January 1, 1915, was $893,317,890. In addition, a temporary loan of $38,932,000 from the gold-standard reserve, in aid of the treasury balances, was outstanding on January 1, 1915.

RIVERS, HARBORS AND CONSERVATION

Hongkong Harbor Improvements.—According to a report by U. S. Consul General George E. Anderson the first step looking toward the ultimate improvement of the harbor of Hongkong along modern lines by governmental agency has been taken in the action of the legislative council of Hongkong in appropriating a small sum for dredging a portion of the harbor for a 30-foot approach to and berth alongside of a new wharf to be erected by the Hongkong & Kowloon Wharf & Godown Co. Ltd. which owns and controls the only modern wharf accommodations in Hongkong. About two years ago this company proposed to construct a new wharf for accommodation of vessels up to 650 feet in length and corresponding draft, but found that the approaches to their property would not admit of the berthing of vessels with over 28 feet draft. The matter was taken up with the colonial government at the time and was referred to London. As a result of the negotiations the colonial government has agreed to dredge two berths alongside the proposed wharf to a depth of 30 feet at lowest spring tide and to dredge 231,600 square yards of harbor as approach thereto. The work will be done by a government dredger which formerly was employed in the construction of the large typhoon shelter in the harbor.

The work is of importance chiefly in that it is the first work of the sort undertaken by the Government in this, one of the greatest shipping ports of the world. For several years there has been considerable agitation in British shipping and governmental circles in the Far East as to the necessity of improving portions of the harbor of Hongkong, not only in the way of the construction of modern wharfs and warehouses in addition to those now existing as the property of a private concern, but also in the way of deepening portions of the harbor which have been silted up somewhat and which otherwise can not properly handle the largest ships coming into the harbor.

British shipping interests on the whole have been opposed to improvement at present on the theory that so long as Hongkong could care for vessels up to the maximum draft allowed by the Suez Canal there was no need for improvements which, when really undertaken, would involve immense expenditures and represent a radical departure in Hongkong affairs. The need of additional modern accommodations for ships and modern means of handling freight is being felt, however, and the increasing probability of embarrassment growing out of the use of the Panama Canal by large ships in the Hongkong trade is leading to action.

Hongkong Reclamation Project.—It is announced by the colonial government that the plans for the reclamation of a portion of the harbor along what is known as the "Praya East" by moving several hills into the sea are expected to materialize at no distant date. The inauguration of the enterprise was stopped by the outbreak of the war in Europe.

Macao to Buy Dredger.—Taking into consideration the growing difficulties of access to the inner harbour due to the constant silting up of the roadstead channel and also the urgency of doing necessary dredging, the Governor of the Province of Macao has called for tenders for the supply of one maritime self-propelling dredger, of steel hull, for the use of the Macao Harbour works. The tenders must be sent to Macao in a sealed cover, addressed to the Governor of the Province, President of the Harbour Administration Board, not later than 3 p.m. of the 8th January, 1916, and made out in accordance with conditions on view in the Harbour Master's Office, Macao, in the Portuguese Consulates in Hongkong, Shanghai, Kobe, the United States of America and the Dominion of Canada.

Cotabato P. I. Harbor Improvement.—Because of the growing importance of Cotabato as the port of entry for the great Cotabato Valley the improvement of the harbor facilities at that place is becoming imperative. The bar at the mouth of the river is gradually silting up and vessels drawing eight feet of water are now unable to get over it except at extreme high tide. There are several projects in contemplation and Governor Carpenter has asked Acting Director of Public Works Gordon to make an investigation in person in order to determine the most feasible one. The Department Governor has asked for an appropriation of P50,000 to cover the cost of the necessary surveys and to begin the work.

Dredging at Cebu Nearly Finished.—Dredging for the port of Cebu, to a depth of 30 feet at low tide, was reported to be 90 per cent completed on October 1. The new 250 meter concrete wharf, which was completed by the bureau of navigation, prior to the taking over of port works by the bureau of public works, has accordingly been placed in service for all coastwise vessels. The filling back of the wharf is 75 per cent completed, approximately 16,000 cubic-meters of dredged materials having been placed. To avoid erosion and as a protection for the street surfacing, the waterfront is being paved with a macadam asphalt, which is 50 per cent completed. The original appropriation for dredging, backfilling and paving was P70,000. Expenditures to October approximated P46,000 with outstanding obligations amounting to P19,000 leaving an available balance of P5,000. Approximately, P13,000 additional will be required to complete the project as originally planned. When this project is completed, the further improving of wharf facilities by the construction of an extension of the present wharf along the east side of the town, forming approximately a right angle at the end of the present wharf, will be begun. The proposed work will include additional street work, dredging and backfilling. The total improved wharfage front for the port of Cebu is now approximately 3,000 feet.

Hobart Tasmania Rivulet Diversion.—For developing the water front on the Derwent River, north of Ocean Pier, it was found that it would be necessary to change the bed of the Hobart Rivulet, which empties into the Derwent at that place by a tunnel under the Domain, which will carry the waters of the Hobart Rivulet into the Derwent about half a mile above the present mouth. The cost of the work will be about $150,000, which will be paid equally by the State of Tasmania, the city of Hobart, and the Marine Board of Hobart. The largest item of the cost will be for constructing the tunnel which will be about 2,000 feet long, 14 feet wide, and 12 feet high, and will have to be blasted through rock about 80 per cent of its length. The work will be done by contract, and the machinery, explosives, and other necessary materials are being obtained from local dealers.

Australia's New Coaling Wharf.—The first section of the new coal-loading wharf has recently been completed in the Newcastle Harbor, at a cost of $210,000. This wharf is one-third of a mile long and of especially heavy construction on account of the electric traveling cranes which it is to support. A system of heavy diagonal bracing was employed between the superstructure and the high-water mark, with the idea of preventing the traverse rails from getting out of alignment, by heavy vessels coming against the wharf. Reinforced concrete construction was used for the "feeder sidings" to sustain the load of heavy freight engines which will be used in bringing the coal trains from the mines direct to the dock. A depth of water of 30 feet will be maintained along the face line of the wharf, but it is so designed that the depth may later be made 35 feet. The average depth of water on the bar at Newcastle Harbor is now 23½ feet at mean low tide. The dock will carry six 15-ton, coal-loading, high-speed electric traveling cranes, each weighing 200 tons. They were manufactured in England. Two have been delivered and the third is on the way.

New Zealand.—The city of Auckland has just let the contract to Langlands (Ltd.), Gisborne, New Zealand, for constructing an impounding dam at Nihotupu, about 16 miles west of the city, with a storage capacity of 540,000,000 gallons, at a cost of $464,879. The height of the dam is 150 feet, length 530 feet, and the water area 36 acres. The time allowed for completion is 3½ years. This is to supplement the present water supply, that is not equal to the growing demand, owing to rapid growth of the city and suburbs.

Macassar Harbor Extension.--Shipping and commercial circles in Macassar have received word from the Harbour Board that the Government has sanctioned the construction of the boat harbour planned some time ago, as well as a northern extension of 380 meters to the 780 meters long sea wharf now in course of completion for sea-going vessels. As a result of the above, 1916 will see Macassar with the old 510 meter pier, the new boat harbor, and a wharf measuring 1,100 meters in length for large vessels. The two latter should, as a matter of fact, be ready for use before the end of this year.

Bangkok's Ferro Concrete Pontoons.—The first ferro-concrete pontoon made by the Bangkok Dock Co. for the Borneo Co., Ltd. has been placed at the wharf of the Company's premises. It appears to be much more stable than the hitherto wooden pontoons.

Yokohama Reclamation Work.—Mr. S. Asano, president of the T. K. K., who has received a permit from the governor of Kanagawa-ken for the reclamation of the Tsurumi beach, in the suburbs of Yokohama, will have the work started soon. The plan is supported by Baron Shibusawa and Mr. Yasuda, president of the Yasuda bank. Mr. Yasuda has contracted to advance 600,000 yen for the new work. After the completion of the reclamation work, Mr. Asano will start several factories for cement, steel pipes and other industrial work, on the ground reclaimed.

Japan's River Conservancy Fund.—The Home Office has included in its estimates for the next fiscal year an appropriation of Y86,980,000 for the river conservancy fund.

FORESTRY AND LUMBER

Reforestation in Anhwei.—Mr. P. C. King, a Master of Forestry of Cornell University, Chief Forester of Anhwei Province, has made *an object lesson for the province by planting* 45,000 trees on the hills outside of the west gate of Anking. It is Mr. King's idea that, when these trees grow up, they will demonstrate to the people of Anking the advisability and practicability of reforestation. To provide seedling stock for further reforestation, a good-sized nursery has been established, and this nursery has already got more than 574,000 seedlings, which will soon be ready for distribution. A Forestry Department has been added to the Provincial Agricultural School, and the formation of a Forest Bureau, with forest stations established all over the province, is under way. Mr. King has had difficulty in getting the Bureau properly started and asked Civil Governor Li's permission to invite Mr. Lin of the Nanking University to conduct a Forestry Lecture Campaign in Anking. Mr. Lin is already stirring up a good deal of interest in Anking and as many as 3,650 persons attended his lectures in three days. The Governor was so impressed that he has asked Mr. Lin to go with Chief Forester King to tour the south of Anhwei, with a view to stirring up more interest among the people there.

Philippine Woods to U. S.—The largest individual order of high grade Philippine cabinet woods ever shipped from the islands is the million feet sent out by the Insular Lumber Company. The first lot of 400,000 feet was shipped loaded on the Dutch steamer Rondo, of Amsterdam, bound for the South Atlantic coast, via the Panama Canal, while the balance of the order, consisting of 600,000 feet, went forward on the Bessie Dollar to San Francisco, and the City of Rangoon to the United Kingdom. The sale of this large parcel of cabinet woods at this particular time is considered significant, as the purchase was made by one of the largest mahogany dealers in the United States, with branches in Europe, who have been using Philippine woods during the past few years in increasing quantities. This order of 1,000,000 feet for immediate delivery, would indicate that Philippine woods have taken their place along with mahogany and other high grade cabinet woods in the world's markets.

U. S. Expert Studies Borneo Woods.—An American forestry expert, D. M. Matthews, formerly in the forestry service of the Philippines, has been employed by the Government to make a general survey of the timber possibilities of British North Borneo whose whole is covered with forest. The trees are *large and the entire coast-line is an unbroken* jungle of palms and mangrove trees, while there are very rare hardwoods suitable for export. Several trees have sand-coloured and reddish woods, very like the so-called Californian red-wood. The most valuable of all Borneo timber is Billian, or iron-wood. This wood is extremely hard, sand-coloured when newly-cut, but darkens with age. It is so heavy that it sinks in water, and for this reason it cannot be rafted down the rivers. Nearly two inches of the outside of the tree is soft and worthless, but the inside can be used for almost any practical purpose where solid, strong and durable wood is required. This wood is ant-proof. A very valuable timber is known by the local name of Uratmata; it has a dark-red colour, grained, not dissimilar to American mahogany, and much desired for shipbuilding, masts and planks. Then there is the wood called Greeting, used for finishing and decorating purposes, although it is immensely heavy, being very like English black oak. The camphor-wood is very valuable for the export trade, having a very agreeable scent, and is in great demand in Hongkong for the furniture industry. The cost of procuring timber is very small. The system in vogue is to fell the timber, using Chinese coolies, and raft it down the rivers to the bay where it is led into lighters, which go alongside the big steamers. The supply of nearly all kinds of timber in British North Borneo will last for hundreds of years. There is an export duty on wood when sold. Only two companies engage in the export timber trade, and we believe that the entire supply goes to Hongkong.

Timber Output of Hokkaido, Japan.—The estimated amount of import of Hokkaido timber to Manchuria this year is about 100,000 pieces of timber each of a foot square and 12 ft. in length, valued at about Y250,000 which is about half the total of last year. The average annual imports from Hokkaido to Manchuria have rarely sunk below Y500,000 before and this falling-off is due to the general business depression in consequence of the War as well as to the comparatively large stock held over from last year. The timber season of this year was backward in its reopening by about a month owing to the belated thawing season. The timber season came in just when steamer freights were very stiff, and this and a few other considerations have made it impossible to lower the ruling price although when the Sino-Japanese crisis threatened to culminate in rupture, the leading local timber dealers cast about for some means to get rid of their stocks.

Philippine-China Lumber Trade.—Seeing in China a great market for Philippine lumber which is at the present time practically untouched, a new lumber concern, the China-Manila Timber Company, has been organized, with headquarters in Manila, and will go into the further development of the Philippine lumber trade at once. The new company has a capital stock of $250,000 gold and already $200,000 gold of its stock, the majority being in the hands of Charles S. Derham, has been subscribed and paid for. The incorporators of the company are Mr. Derham, Victor Hoffman, F. D. Almeida, Narciso Xavier and Hipolito Peralta, all of Manila. According to the articles of incorporation the company's stock is made up of 5,000 shares, selling at $50 each. While the head offices of the company are to be in this city, it is understood that branches will be opened in China coast cities in the near future.

Mindanao Lumbermen Want Standard Grades.—The Mindanao Lumbermen's association has presented a petition to the Government of the Philippines asking that the Bureau *of forestry rules for grading lumber* be enforced. The petition is in part as follows.

"There can be no question but that the interests of both buyers and sellers of lumber can best be served by the adoption of standard grading rules, such as the Bureau of forestry, appreciating the necessity of improving the manufacture of the Philippine lumber and standardizing the grades, has formulated. The Mindanao Lumbermen's Association through its individual members has carefully studied these rules and believes that their adoption is for the public good and the betterment of the lumber business. Therefore we respectfully request that all purchases of lumber in this Department be made under these rules."

This question of standard grading rules has frequently been the subject of discussion in the press, and has been strongly urged by the director of forestry. In the last annual report of the bureau of forestry, the matter is discussed as follows:

"Before Philippine lumber can secure for itself the place in the world's markets to which its qualities rightfully entitle it, it is necessary that there should be formulated standard grading rules and that they should be enforced by authoritative impartial inspection. In the absence of such rules, misunderstanding and financial loss are occasioned both to purchaser and seller, and this is particularly true in the case of foreign shipments. The Bureau of Forestry has already drawn up a tentative set of suggested grading rules, the work being done in co-operation with the Bureau of Supply and with a few of the principal lumber manufacturers."

It seems probable that as the Mindanao Lumbermen's Association has now taken definite steps to lead the way, other lumbermen may be induced to fall in line as the failure of Philippine lumber to measure up to the standard shown in samples has cost the producers many orders running into millions of feet.

Philippines and American Lumber.—Commercial Agent Franklin H. Smith, who is investigating the lumber trade in the Far East finds that the Philippine market, so far as imports are concerned, is dominated by American lumber. The islands provided a market for more than $500,000 worth of forest *products in the 12 months ended June 30, 1914,* and practically the entire quantity was shipped from the Douglas-fir mills of Washington and Oregon and the redwood mills of California. Mr. Smith found a sharp competition by native woods, and it is his opinion that this will inevitably become keener. Each succeeding year, he thinks, will witness an increasing cut of Philippine woods. The conclusion reached is that the prospective demand for American lumber in the Philippines is not particularly encouraging.

MINING AND METALS

Coal and other Mines in China.—According to recent investigations made by the Agricultural and Commercial Department, in China there are 12 coal mines, 2 iron mines, 1 nickel mine and 2 antimony mines. At present, the annual output of coal aggregates 15,000,000 tons, while 656,000 tons of iron are taken out. Should the mines be worked with modern machinery, the output would be tenfold the amounts now produced.

Gold-Mining in Szechuan.—Gold is found in many places in the province of Szechuan, China, and the upper reaches of the Yangtze are known by the natives as the Kinho, or gold river. Alluvial gold workings may be seen along many streams; near Ta-chien-lu, for example, 500 or more men are at work. The most important lode mine so far found is at Maha, in the southwestern part of the province, about 50 miles northwest of Ning-yuan-fu. Work on the mine was started some years ago, but on account of revolutionary disturbances not much has yet been accomplished, although several large and productive veins have been found. Two Chinese engineers who have studied in Belgium are now in charge of the property, and some 1,200 men are employed. Funds for financing the work of development have been provided by the Government and it is the intention to purchase the necessary equipment in America. —Mining Press.

Yunnan Copper Mines.—From time immemorial, Yunnan has been known as a copper district. But owing to the primitive mining methods employed its yearly output is only 1,900,000 catties, supplying a small fraction of China's demand, the government mints using copper to the extent of ten million catties a year, the bulk of which is supplied by Japan. An engineer in the Department of Agriculture and Commerce has memorialized the authorities, according to Chinese Press reports, to work the mines with up-to-date machinery, submitting to their consideration at the same time an estimate for expenses necessary for the improvement.

Tayeh Iron Works.—As a result of the decision by the Directors of the Hanyehping Corporation to establish a branch iron works at Tayeh, a piece of land comprising a few thousand *mou* has been laid out for the site. An engineering department for the construction of the works has been opened at Tayeh. The Company has ordered its new installation from the United States for this branch.

Placer Mines in Heilungkiang.—Placer mines of a promising nature are said to have been discovered in Heilungkiang, and a plan to work them under Government management has taken a tangible shape in a placer mining office. Mr. Chu-chao has been appointed its director and Mr. Liu-wenfeng, manager.

Asbestos in West China.—Valuable asbestos desposits have been found in Szechuan Province near the city of Pachow. As the asbestos appears to be of good quality and the price is very low the possibilities of direct exportation to the United States is expected to be of interest to American dealers at this time.

South China Coal Field.—There is a very fair prospect for the development of one of the coal-fields of South China, within Hongkong's trade territory. At several localities along the West and North Rivers, near Canton, coal fields have been worked in native fashion for some time, and the output has come to amount to a considerable volume. A mining expert, reports American Consul-General George E. Anderson, of Hongkong, has had occasion to look into one of these fields and gives some facts of interest. The property is situated on the North River, about 160 miles from Canton, the actual mine being located a mile from the river. The survey for the Canton-Hankow railway crosses the property. The property occupies broken ground, embracing two lines of hills of considerable height. The native workings are located from 800 to 1,000 ft. up the side of one of these ranges, and the seam has been followed down for about 400 ft. It is about 9 ft. in thickness.

The region is essentially coal country; the predominating rock is limestone intermixed with layers of sandstone and slates. Millions of tons of coal are actually in sight. The Government analyst in Hongkong reports on a sample of this coal that it contains 0.80 per cent of moisture, 17.60 per cent of ash, 20.70 per cent of volatile combustible matter, and 60.90 per cent. of fixed carbon. The percentage of sulphur is placed at 1.2 per cent, and the calorific value is 12,830 British thermal units. The ash is greyish white in colour. The coke is of hard behaviour when burned, and burns with a fairly long flame.

The immediate need of these fields at present is modern machinery. The capital needed for the development of the property examined is placed at G. $150,000. On the basis of this investment an output of 500 tons of coal per day is indicated.

Alluvial Gold at Hsiaopingtao.—The proposed mining of alluvial gold deposits about Hsiaopingtao, at a short distance from Hoshigaura, Liaotung Peninsula, as applied for by a couple of local Japanese residents, was permitted by the Kwantung Government under date of the 2nd inst.

Japan's Lack of Steel.—All the shipbuilding yards of Japan now keenly feel the dearth of shipbuilding materials. Owing to the import of materials from England having been practically blocked by the European War, the home yards have had to depend for such supplies upon either the Government Steel Works, Edamitsu, or the United States.

Out of 3,000 tons of steel required for two vessels, each of 7,500 tons now building at the Mitsubishi Yards, Nagasaki, only 600 tons were supplied by England and the remainder by the steel works. The keels of these vessels were laid on June 7th last, and the work is making rapid headway.

The Osaka Iron Works and the Kawasaki Dockyard Co. have ordered a large amount of steel from the steel works, which is unable to meet their requirements. In consequence, these companies have already contracted with American steel works for the necessary supply. The current price of American steel has risen remarkably and is quoted at Y130 per ton for delivery at Kobe, showing a rise of Y30 over quotations a year ago.

Fushun Coal Exports.—The Fushun Coal export returns from Dairen for July total 20,838 tons, showing an increase of 925 tons over the previous month but a decrease of 6,024 tons from the corresponding period of last year.

Hokkaido, Japan, Mines.—A report from the British Vice-Consul Mr. G. B. Sansom at Hakodate regarding the mineral resources of the Hokkaido (the northern island of Japan) states that coal is plentiful and is found chiefly in the Ishikari district, the best known mines being those of Yubari, Horonai, Ikushumbetsu and Sorachi. The quantity of coal mined in 1912 was about 1,885,000 tons. There is only a small export as the domestic demand is great; but foreign-going ships frequently enter the port of Muroran for bunker coal. The output of sulphur in 1912 was 30,000 tons, as well as about 15,000 tons of crude brimstone. The quantities of other minerals mined are inconsiderable, but the poverty of inland communications makes the progress of mineralogical survey slow. In several parts of the island "magnetic sand" is found, but this, of course, has so far no commercial value. The petroleum found in the Hokkaido is said to be of rather better quality than that from the Echigo fields, but the volume of the output is negligible.

Mining in Chosen (Korea).—By an agreement concluded between an Italian Mining Company and the former Korean Government the company has been holding the right of selecting mining concessions in Huchang District, North Pyongando. The company has selected a concession, 387,000 tsubo in area, and the period for free selection has recently expired. It may be mentioned by the way that now that the period has expired those desirous of working mines in the District mentioned excepting the concession already selected by the Italian company may now apply for permission to do so.

By a similar agreement concluded between the Colbran Bostwick Development Company and the former Korean Government, the Company has held the right of selecting concessions anywhere in Kapsan District, South Hamkyongdo, and has so far selected four concessions for copper mining and fourteen for alluvial gold mining. We learn that the period for free selection by the company will expire by the end of this year.

Korean Mining News.—The Seoul Mining Co., operating the Suan concession in Whang Hai province, reports the following results for July at the Suan mill:

Ore treated, tons, 6270; Mill working days, 26½; Recovery, bullion, $45,785; Recovery, concentrates, $30,680; Total of, $76,465; Operating expenses were, $27,500; and Net earnings, $48,965.

Recent reports from the Suan Concession state that an extensive ore deposit has been partly developed near the Suan mill. The superficial area is about 5,000.000 sq. ft., the depth varying from 3 to 70 ft. Metal contents are approximately 50c. gold and 1.5% copper.

In June the Oriental Consolidated produced $136,500. Details of the May return are as follows: ore treated, 26,483 tons; yield from all plants, $154,231; the Candlestick mill started on May 15; 40 stamps at the Maibong are now dropping; extraction at the Maibong tube-mill was 85.6%, and with slag, 88 or 89%; and recovery at the Taracol cyanide plant 93.6%. There are 20 Korean 10-stamp mills working at Kuk San Dong. The tributers are working various stringers and pillars, and are paying the company a fixed mill rent. The company also buys the gold they produce.

Angaur Island Phosphate Mine.—The Japan Artificial Manure Manufacturers' Association is preparing a petition to the Government for permission to resume the working of guano fields at Angaur Island. In the petition the association will state that the manufacturers will take all responsibility for the working of the fields when any trouble crops up with the German owners on the restoration of peace. (Full description was given the Angaur Island phosphate deposits in the *Far Eastern Review* for July).

When Japan occupied the German islands in the Southern Pacific, the naval authorities placed the phosphate mines and plants in Angaur under care of the Nanyo Keiyei Gumi, a concern headed by Mr. Nishizawa, who is a sea adventurer of some note according to the Japanese press and whose enterprise and occupation of Pratas Island caused a diplomatic dispute between Japan and China some years ago. The Nanyo Keiyei Gumi did not hesitate to gather phosphate, using all the plants left by Germans, and shipped the output to Japan, the entire proceeds from the sale going to this corporation. This caused envy and opposition among business men interested in the fertilizer trade and especially among partizan politicians who are seeking Government favoritism. After many complaints from these parties and the home Government officials, the Naval Office decided to prohibit the Nanyo Keiyei Gumi gathering guano for export after August 31.

Now it is reported that the supply from various guano producing islands having long been stopped owing to the lack of ships, if the supply from Angaur also is stopped the only phosphate rock will be that from the Ocean Islands, being worked by the Mitsui Bussan Kaisha. The output from the Ocean Islands is about 70,000 or 80,000 tons a year, hardly one fifth of what Japan demands. It follows then that nothing can prevent the Mitsui firm from dictating the price and farmers already suffering from low market prices for their rice crop will be in greater difficulties if the price of fertilizer is enhanced. For the above reasons, representative companies and traders have now decided to approach the Government to withdraw the restriction on the gathering of Angaur guano. Mr. Tanaka, President of the Kanto Sanso Kaisha, who is a leader of the movement, interviewed by a press representative, has suggested that the Angaur guano should be supplied to Japan, but not by one individual who can make a monopoly, but either by a body of manure companies or traders in general, or by the Government, and the guano produced should be sold to manure companies at a moderate price so that the farmers may benefit.

Burma Coal Deposits.—Coal of sorts has been discovered in Burma from time to time, but has not always come up to expectations. The latest find to receive attention is that at Wetwin, which is about nine miles in a direct line east of the Lashio branch of the Burma Railways at Wetwin station. The extent of this find is unknown, and, to determine it, extensive operations and borings would be necessary. The coal is of a dull black colour, resembling carbonaceous shale; and, on being exposed to the air, it quickly crumbles to powder. It does not appear to have any particular value as a boiler fuel, but might do well in the shape of briquettes.

World's Copper Production.—The production of copper in the world in 1914 amounted to 893,085 tons, a decrease of 91,775 tons from that of 1913. There was a falling off of more than 10 per cent in the output of the United States, Spain, Mexico, and Australia, but that of Germany, estimated at 39,000 tons, represents an increase of about 5,000 tons over the preceding year.

F. M. S. Tin Exports.—Following are the comparative figures for tin and tin ore exports from Federated Malay States for the first seven months of the past four years. Seventy per cent of the gross weight of the ore is taken as net weight of tin :—

Total for				Tin. Pikuls.	Tin Ore. Pikuls.
first	seven	months,	1915	39,575	411,703
do	do	do	1914	40,260	455,071
do	do	do	1913	51,121	421,435
do	do	do	1912	109,754	353,815

WIRELESS

U. S. to Tahiti and N. Z.—Wireless communication between San Francisco, New Zealand, via Honolulu and Tahiti, is to be established within the next five or six months. A French electrical and mechanical engineer is expected to arrive shortly to supervise the erection of a plant at Tahiti sufficiently powerful to bridge the gap between the French colony there and New Zealand.

Wireless for the Philippines.—The contract for the erection of the three 600-foot steel towers at Cavite, for the United States Government wireless station has been awarded to the Chicago Bridge Company. This company has also been awarded the contract for the erection of the steel towers for the United States Government wireless stations at Honolulu and San Francisco, the towers at Honolulu and San Francisco being identical in size with the towers to be erected at Cavite.

Southern Philippines Wireless.—Work on the new wireless station at Margosatubig is nearly completed. This work has been going on for some time and as soon as the new batteries are installed the plant will be ready for service. Margosatubig will be in direct communication with Samboanga, Malabang and the Manila cable system. The station is in a thickly populated section, where several large industries are being carried on.

Wireless to Japan.—To perfect tests for the longest wireless span in the world, from Hawaii to Japan, 4,100 miles, three of the leading men in wireless development visited Honolulu recently. They are E. J. Nally, vice-president and general manager of the Marconi Wireless Company with headquarters in New York; A. H. Ginman, general superintendent of the Pacific Coast division with headquarters in San Francisco; and C. H. Taylor, chief engineer of the high power stations. The experts spent most of their time at Kahuka where the big sending station is located. When the station was built the engineers had in mind the utility of a relay between Japan and America. Mr. Ginman was at Kahuka last August when the finishing touches to the station were being made.

Soon after their visit the Japanese Navy Office announced officially that the Naval Wireless Station at Funabashi, in China prefecture, would open for general public business soon as trial messages with the wireless station at Hawaii, a distance of 3,379 nautical miles, had been successful, both day and night. The new station is in the village Tsukada Higashi-Kashika county and the site covers a large area.

The towers are of steel frame work. There is one large one and eighteen smaller ones. The principal pole is 200 metres high and weighs 141 tons. It rests on an insulated stand. The basement consists of 600 tons of material. The eighteen towers are erected around the principal one, each at a distance of about 400 metres. Each of these poles is 60 feet high. They hold thirty-six wires stretching from the top of the principal pole, in the shape of an umbrella. The total cost of the construction of the station, including machines, land and buildings is 1,160,600 yen.

Wireless Telegraph at Singapore.—A permanent wireless station at Singapore is now in operation. The apparatus is a complete Marconi 5-kilowatt system, having a guaranteed range of 400 miles, which can be exceeded under favorable conditions. The station is on the coast along the eastern border of the city. The towers are 250 feet high. The total cost is estimated at Straits $200,000 ($113,540 U. S. currency). At the outbreak of war a temporary radio station was erected on the top of a building in the center of the city, but it is not a high-powered station and has been maintained for the Naval Intelligence Bureau here. It is announced in the Government Gazette of the Federated Malay States that 10 acres are required in Penang and Butterworth for a wireless telegraphy station.

TELEPHONES AND TELEGRAPHS

Shanghai Telephone Service.—The telephone service at Shanghai is provided by a local company which now utilizes upward of 5,000 telephones, and which is at present building an additional exchange in the residential part of the city. The telephone instruments now used by the company were manufactured in Sweden and are far from being as satisfactory as those in use in the United States. The Shanghai Mutual Telephone Co. (Ltd.), which provides the telephone facilities at Shanghai, was organized in March, 1900, and, during its 14 years of existence, has grown steadily. The nominal capitalization of the company is $600,500 divided into 20,000 shares of the par value of $31.125 each. There have been issued 14,540 shares at par value, making a total of $452,557.50 paid in. On this sum the company paid, at the end of the last fiscal year, a dividend of 8 per cent. The total pay roll of the company was, last year, $50,889. Of this amount $32,641 was paid to foreign employees and $18,248 to Chinese employees.

Chinese Telephone System for Tiehling.—The Chinese authorities and gentry at Tiehling have purchased 60 telephones manufactured at Osaka, a switchboard, and about 70 miles of telephone wires at the price of silver yen 13,000. A Japanese firm at Changchun is the supplier. The police station at Shantoupu in the north of Tiehling is to be connected with another at Tatientzu in the east. The remainder are to be used mostly for connecting the village police with the Tiehling police. The service was originally designed to afford quick communication with the police in case of bandit raids and is expected to extend later to Fakumen, Mukden and Kaiyuan.

Zamboanga Telephone System.—A contract has been awarded to The Bryan London Co., of Iloilo, for the installation of a telephone system for the city of Zamboanga. The contract calls for the Leich Automaphone system which requires no ringing of a bell when calling central, the lifting of the receiver being all that is necessary. The contract price is P14,160.00 and provides that the government is to construct and erect the concrete poles. These poles will also be used for the wire for the electric light system for the city of Zamboanga which the government will shortly install. Work has been started on the construction of the concrete poles and as soon as a sufficient number have been completed they will be set in place. These posts are 30 feet high with ample room for all the wires needed for the telephone lines, as also for the electric light wires. The telephone lines, it is understood, are to be extended to Tetuan and San Ramon Penal Colony.

Telegraph in Tayabas.—A new telegraph line has been established from Guinangan to the barrio of Kabibilan which connects up many of the outlying towns in Tayabas Province, P. I., and Governor Lukban is also erecting a new line between Pitogo and Macalalang.

Eastern Mongolia Telegraphs.—According to Dairen advices the Communications Office, Peking, has decided to start the construction of a new telegraphic line between Kalgan and Taonanfu and also between Mukden and Taonanfu immediately. The construction work will take six months. The Military Government of Jehol and the Provincial Government of Fengtien are to contribute between them sufficient out of this year's revenue for the purpose. The two Governments have been ordered to set about buying the necessary materials. For the other telegraphic lines to be constructed in the same region, the Communications Office, Peking, will make a monthly disbursement. These include a line from Kalgan and reach Mongolia via Dolonor and one from Jehol to Taonan by passing through Chaoyang, Chihfeng, etc. The three lines will aggregate in length over 1,640 miles, requiring an outlay of some $1,349,500 for construction.

Mindoro Estate Gets P300,000.—Governor General Harrison has announced an additional government loan of P300,000 through the International Banking corporation to the Mindoro Development company, owners of the San Jose sugar estate. This makes the total loan to the Mindoro company P900,000. The governor general some time ago passed favorably upon a deposit with the International bank of P600,000 to be loaned to the Mindoro company, but this proved insufficient. This aid was arranged for in the same manner as the loans of P2,700,000 for the aid of the sugar growers in Negros, Panay, Iloilo, and Capiz which is being handled by the Bank of the Philippine Islands. The original P600,000 and the additional P300,000 have been deposited with the International Banking Corporation at a fixed rate of interest, and by that bank is lent to the Mindoro company. The government is secured by the bank.

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Worthington Pump Co., Ltd.

Turbines, Steam
General Electric Co.

Turbo-Blowers
Westinghouse E. & M. Co.

Turret Lathes
Jones and Lamson Mchy. Co.

Valves
Shewan, Tomes & Co.

Vanadium Steel
U. S. Steel Products Co.

Vegetable Oil Plants.
A. F. Craig & Co.

Ventilating Apparatus
Shewan, Tomes & Co.

Water Softeners
Babcock & Wilcox Ltd.

Waterworks Equipment
Edgar Allen & Co. Ltd.
Worthington Pump Co,

Weaving Machinery
Shewan, Tomes & Co.

Weighing Machines—Weigh Bridges
W. & T. Avery, Ltd.

Welding Outfits, Electric Arc.
General Electric Co.

Windmill
Fairbanks, Morse & Co.

Wireless Telegraph Apparatus

Wire Nails
U. S. Steel Products Co.

Wire Rope and Cables
Bohler Bros. & Co., Ltd.
U.S. Steel Products Co.

Wood Working Machinery
American Tool Works Co.
Defiance Machine Works
Shanghai Dock & Engineering Co., Ltd.

Wrenches
Trimont Mfg Co.